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DESIGNS AND SPECIFICATIONS

FOR

New Mexico Public School Buildings

ISSUED BY THE

TERRITORIAL DEPARTMENT OF EDUCATION

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1909.

PLANS AND SPECIFICATIONS

FOR

SMALL SCHOOL BUILDINGS

PREPARED BY

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ALMA, NEBRASKA

UNDER THE DIRECTION

OF THE

Territorial Superintendent of Public Instruction

INTRODUCTION.

The building of public school houses is an art. An architect who is supremely successful in planning business houses, great hotels, sanitariums, or state buildings, may be an absolute failure in planning school buildings. The unpardonable waste of money, material, and effort as well as the irreparable injury to teachers and pupils, physically, due to the ill construction of so many of our public school buildings, have been noted for years by the close observing, practical school men, and thruout our country at large, there is a well directed effort toward marked improvement in school house construction.

The New Mexico Department of Education has secured all the pamphlets published by the educational departments of the various states in the Union and acknowledges valuable assistance from these sources. It is our hope that this book of plans may be of real service thruout our Territory in directing the attention of our boards of directors, county superintendents and teachers to the best approved plans for sanitary, convenient, and artistic school buildings.

The cuts for pages 7, 8, 9, 10, 12, are loaned by the Department of Public Instruction, South Dakota.

Johnson Brothers, Alma, Nebraska, are specialists in school architecture and any school board may make arrangements with them for special plans to meet local needs, in the event that the plans in this book do not suffice.

J. E. Clark, Supt.

Territorial Superintendent Public Instruction.
Santa Fe, N. M., November 10th, 1909.

THE SCHOOL SITE AND THE SCHOOL HOUSE.

"The first problem that presents itself for solution in the erection of a school building is the selection of a site, and in making this selection the chief things to be considered are "size, soil and sightliness and location," in the community with reference to accessibility and relative distances to patrons served.

While no school lot should contain less than one acre and should preferably lie in rectangular form, about 180 feet front and 240 feet in depth, yet if the land is cheap two or three acres are much more desirable. This will give ample space for all the outdoor sports—an incalculable advantage which all rural schools should possess.

The soil of a school site should not have beneath it a stratum of impervious clay which will permit ground water to stand in the yard, but should have a porous soil free from decaying matter.

The surface of the school ground should slope toward the road and its elevation should be sufficient to drain all parts naturally. The site most perfectly located would be one with natural drainage in all directions. It should also possess as many natural features of beauty as possible, and while it should not be located in an obscure or isolated spot, yet great care should be taken to avoid a location where there is "frequent passing, travel or local industries that would disturb the work of the school."

Having briefly described some of the necessary requisites of a good school site let us consider briefly the elements of a good school house. The size of the building must be determined by the number of occupants that are to use it, but whether it is a small one-room house for the accommodation of twenty-five pupils, or a large structure for twenty-five hundred, the same laws of sanitation should prevail and the same care in the selection of material and good workmanship should be exercised. I know of no better description of what a public school house should be than that given by Mrs. Sigourney, of Connecticut, who said: "I hope the time is coming when every isolated village school house shall be a temple on whose exterior the occupant may study the principles of symmetry and grace. Why need the structures where the young are initiated into those virtues which make life beautiful be divorced from taste or devoid of comfort? Why should they not be erected in fine, airy situations, overshadowed with trees and embellished with shrubbery? Why should not the velvet turf attached to them be bordered with hedges, divided by gravel walks, tufted with flowers? It is easier to enforce habits of neatness and

order among objects whose taste and value make them worthy of care than amid that parsimony of apparatus whose very pitiful means operates as a temptation to waste and destroy."

It is in the poor, dilapidated, dust begrimed, filthy schoolrooms that the spirit of vandalism asserts itself, for there is nothing there to command the respect of the boy. We believe it is as much the duty of the school to cultvate the æsthetic side of the child as it is to teach the multiplication table, or the single rule of three.

We do not mean to sacrifice the healthfulness or utility of the school house for the beautiful, in the sense of building a three hundred dollar tower on a two hundred dollar house, but grace and symmetry may be wrought in the one-room school house just as easily as in the larger and more costly buildings."

HON. R. L. JONES,
State Superintendent of Public Instruction for Tennessee.

VENTILATION.

The most important problem in the construction of school buildings is the method of ventilation. Air which is breathed and rebreathed soon becomes very foul and produces a stupor that wholly unfits the pupils for the mental effort required of them. Teachers of experience well know that children often become uncomfortable, dull, and irritable, especially during the last periods of the day. This is by no means due simply to mental fatigue. It can nearly always be traced to improper ventilation—a lack of fresh air. The necessity for some scheme for ventilation, and its value in the school room, can not be overestimated. Doors and windows alone cannot adequately supply the school room with fresh air. Other means must be provided for securing this and for the withdrawal of the foul air. It is too often taken for granted that foul air will, of its own accord, escape from the room if we provide an outlet. This is a great mistake; not only must we furnish a proper outlet, but we must see to it that the bad air is forced from the room, in order to make way for pure, fresh air.

The only practical plan of ventilation in small buildings is the gravity system, of which the following is an explanation:

The chimney is divided into two parts—a smoke flue and a ventilating flue. The one should measure at least 8x12 in., and the other 16x16 in. inside measurements. If for any reason the chimney is built less than 25 ft. in

height (for instance, in a flat roofed building), the inside measurements should be made correspondingly greater, for the reason that the velocity of heated air in a chimney increases with its height.

At the base of the ventilating flue, and opening out into the school room, is a register the same size as the cross section of the flue. It is a well known fact that, when air is heated, it expands and tends to rise. Consequently the colder air of the room will be found near the floor. Now the heat from the smoke chimney warms the air in the adjoining air vent and causes it to rise. The cold foul air near the floor rushes through the open register at the base of the air vent to take the place of the escaping column of warmed air, and it, in turn, is heated and passes on through the chimney. Fresh air is introduced inside the room, by means of a flue built under the floor and conducting the air from outside the building to a chamber directly under the stove. From this chamber the air passes up through several small openings between the stove and the jacket, is heated, and passes out over the jacket to the ceiling where it spreads and falls uniformly over the room. As the air cools it gradually sinks to the floor, and with the heavier impure air, is drawn out through the register and up the ventilating flue. In this way the room becomes filled with pure warm air without sensible currents or drafts.

Small ventilating registers should also be placed in the halls and cloak rooms.

During warm weather and when there is no fire in the stove, ventilation may be secured in either of two ways. (1) By opening the transoms and raising the windows on one side of the room only. This prevents drafts. (2) Better ventilation, however, is secured by heating the air column in the ventilating flue by means of a lighted lamp placed inside the flue just above the register, on a wire rest which has been built into the wall. This will create the necessary draft for ventilation, and when so arranged the windows need never be opened.

The fresh air flue should be built from an outside wall directly to an air chamber under the stove. The cross section of the flue should be at least 20 in. x 20 in. and the chamber should be about 6 ft. square and 24 in. in depth.

School buildings should be so constructed as to provide for each pupil at least 216 cu. ft. of air space, and supply him with 30 cu. ft. of fresh air per minute. A room 24 ft x 30 ft. with 12 ft. ceiling, and seating 30 pupils, needs the equivalent of a chimney 16 in. x 16 in. inside measurements, to furnish the required amount of fresh air.

Another good plan may be suggested here: Build but one flue, but make it 20x20 in. Run a stove pipe up through this large flue, allowing it to extend about 3 ft. above the top of the chimney. This plan gives us the smoke flue within the ventilating flue. It is somewhat cheaper but is not so substantial as the other plan.

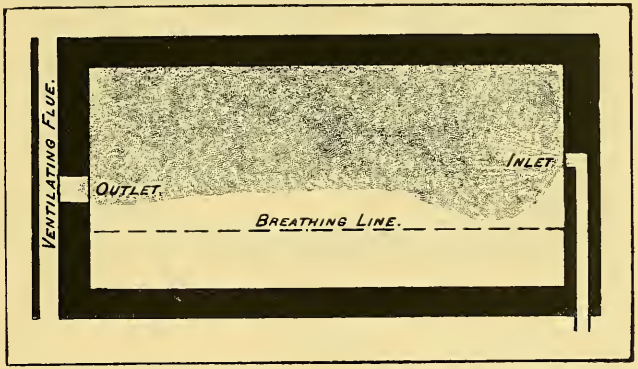


Figure 1.
Showing Inlet at one end of Room and Outlet at the other.
(Shaded portion showing warm fresh air in room. Unsatisfactory method.)

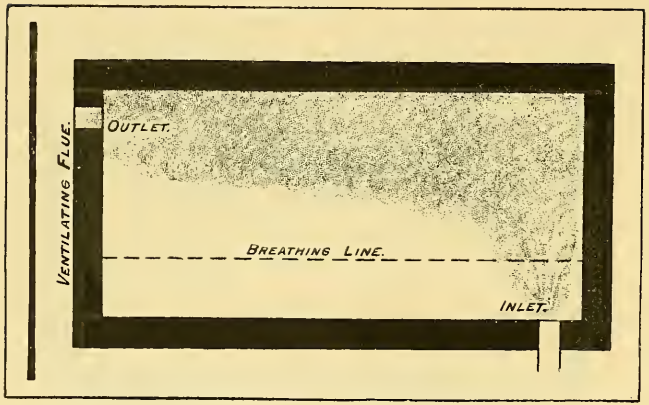


Figure 2.
Expensive Heating Poor Circulation and Ventilation.

Any system of ventilation where the foul air exhausted is above the breathing line will have the same fault as illustrated in figures 1 and 2, no matter where the fresh air properly warmed is admitted. The fresh air does not circulate so as to give children any benefit.

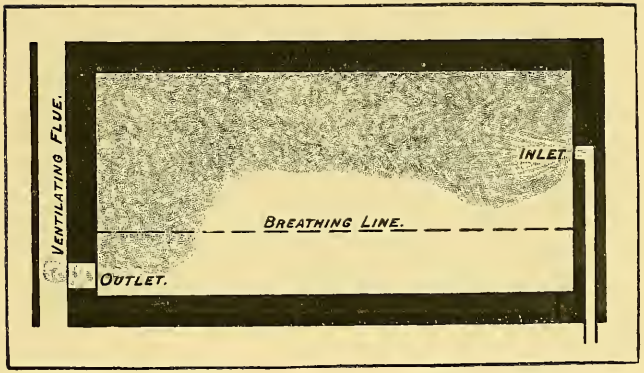


Fig 3.
Poor Circulatiom and Ventilation.

If the fresh air intake and the foul air exhaust are at opposite sides or ends of the room with the exhaust near the floor it is liable to give a circulation as shown in figure 3.

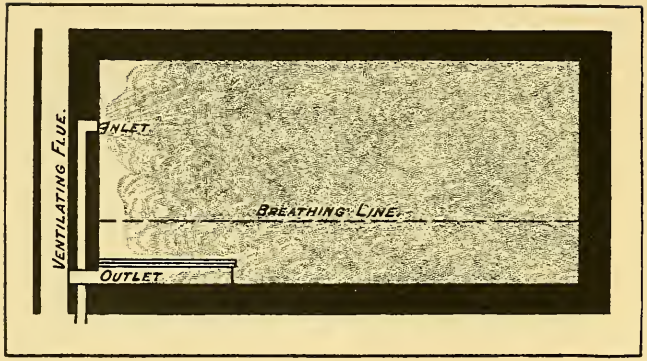


Figure 4.
The Best Plan of Gravity Ventilation.

If the room is heated by a stove it may best be set anywhere near the wall that contains the ventilator provided it is a few feet to the right or left of the foul air register. The stove should not be set in the center of the room. With proper circulation all parts of the room will be properly warmed. The stove may, if more convenient, be placed in any part of the room with less harm to the heating and ventilation than will attend such arrangement of a hot air furnace. Where such furnace is used warm air inlet should always be six or seven feet above the floor and on the same wall as the ventilator, not directly above it but a little to the right or left. This cut shows outlet under teacher's platform, but the platform is not only unnecessary but undesirable. The foul air register should be in the wall at the baseboard.

HEATING.

In small buildings, stoves of proper construction and size, afford the most practical method of heating. When a building is heated with a stove, the following directions should be observed.

SIZE.—It should be large. Large stoves give a more uniform heat and require less attention. For a small school room it should have a fire pot 22 in. in diameter, and should be correspondingly larger as the size of the room is increased. Avoid all rims and flanges that will interfere with the upward flow of air, between the stove and its jacket.

POSITION.—It should be placed at one side or in a corner of the room, where it will be less in the way. When provided with a jacket it will be just as effective as if placed near the center of the room.

JACKET.—It should be jacketed. A jacket can be made of sheet iron or tin at a small cost. Beginning at the floor, it should extend to a height of 5 ft. or 6 ft. and should entirely surround the stove at a distance of from 12 in. to 18 in.

For further description of heating apparatus and the circulation of the air in the room, see the article on "Ventilation."

With such a system as this, the back part of the room is as well heated as any other part, and the pupils near the stove are not uncomfortable from the heat. In winter, a window need never be opened, and yet the air is always pure.

If the foundation walls are good, the floor is always warm. The room is warmed in a short time. The cost is insignificant. The saving of fuel alone will pay the additional cost in a few years. It is a well known fact that a steady fire consumes less fuel than an unsteady one.

The temperature of a school room should be kept between 68° and 70° Fahr. Fireplaces are good only for ventilation. They are wasteful of fuel, create drafts, and heat unevenly. They are not at all satisfactory for heating a school room.

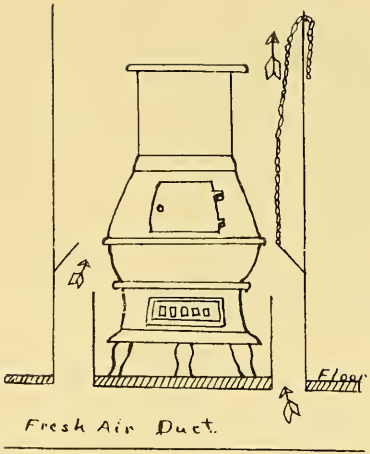


Figure 1.
Section of Jacket Around Stove.

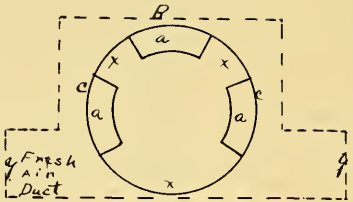


Figure 2.
Plan for Jacket Stove.

Dotted lines represent fresh air duct under floor.
CC. Circle on floor over which jacket will stand.
B. Back of stove.
aaa. Openings in floor to let fresh air rise into ducts of jacket.
xxx. Arches under jacket to permit air of room to circulate freely around stove.
yy. Sliding valves to be placed at walls to close fresh air ducts.

LIGHTING.

The school room can not be too well lighted. It has been estimated by the best authorities that the amount of transparent glass surface admitting light should be no less than one-sixth of the floor space of the room. In a school room 24 ft. x 30 ft. the amount of window glass should be at least 120 sq. ft.; and if the building is at all shaded, the amount should be increased.

Light should always enter from the left of the pupils. If, however, it must enter from two sides, windows on the left, and half windows placed high in the rear, should be provided. Windows should never be placed on opposite sides of the room, as the resulting cross light is very hard on the eyes, and light from the front is still more injurious and should never be tolerated.

It is best to locate windows in batteries—i. e. several in a group—rather than distribute them at equal distances along the side of the room.

The top of the window should extend entirely to, or within a few inches of the ceiling, and the window sill should be somewhat above the level of the eyes of the pupil when seated.

No window should be placed in front of the front row of seats, in any school room.

There can be no question but that the healthfulness and desirability of a school room is very much increased by having the rays of the sun shine into it during some portion of the day. Sunlight—besides being the best purifier known, and for this reason making impossible a great many diseases and a large number of discomforts—adds much to the cheerfulness of the room. It is unwise, however, to allow the direct rays of the sun to fall upon the children, and particularly upon their books or desks.

In some localities, especially in the South, where the south light is very strong, it would seem advisable to face the building so that the school room light will come from the east or the west.

Window shades of ecru should be provided for all windows, and, as the best light enters through the upper half of the windows, the shades should either be adjustable, or roll from the bottom, being raised by a cord and a pulley at the top.

SEATING.

Perhaps no one thing helps more in individual development than the seating of a school in single seats. Discipline is easier, more work can be accomplished by the students, and there is less danger of contagion by the handling of one another's books and pencils.

It is easier to accommodate all sizes of pupils with single seats than it is with double ones. In many country schools the seats have been so arranged that all small children are in the front part of the room and all large ones in the back. It is better to put seats of one size in each row.

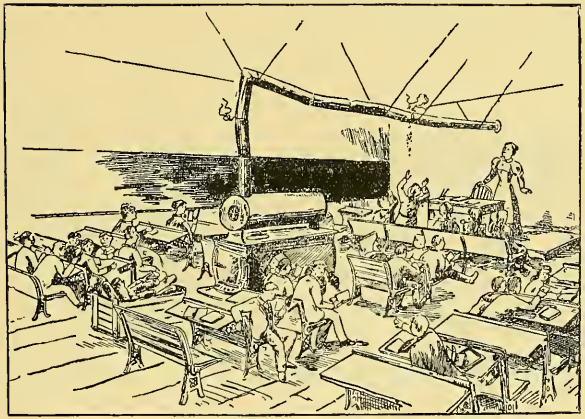
Desks are made in sizes from No. 6, the smallest, to No. 1, the largest. If there is room for four rows of seats, probably one row each of sizes 2, 3, 4, and 5 will be best; but if there is room for five rows, add another row of size 5.

Every pupil should be so seated that his feet will touch the floor; so if there should be some pupils for whom No. 5 seats are too high, place all of these in one row and put a twelve inch plank lengthwise under their feet, blocking it up until it is the right height.

Too often the seats are placed so far apart that the pupil must lean forward in an unnatural position in order to write or draw. No. 5 desks should be nine inches apart; that is, the edge of the desk in front of the child should be nine inches from the back of the seat in which he sits. No. 4's should be ten inches apart, No. 3's eleven inches, and No. 2's twelve inches.

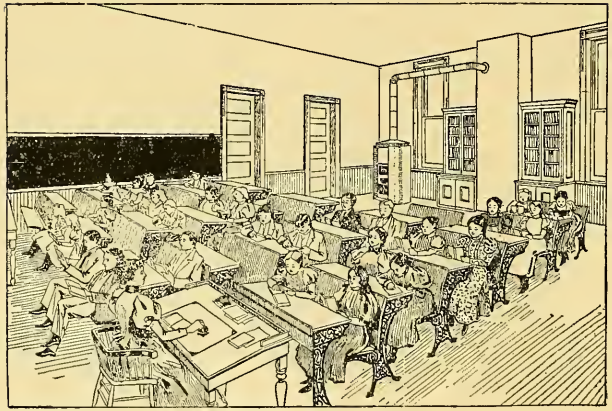
The aisles at the sides and at the rear of the room should be at least thirty-six inches wide, and those between the rows of seats at least twenty-four inches.

The smaller desks should be placed nearest to the light and no desk should be farther than twenty-five feet from the source of light.



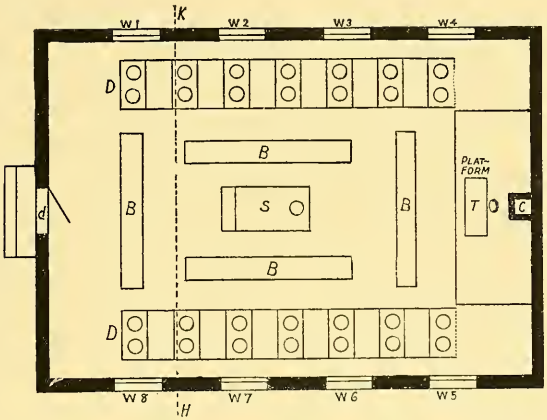
The Badly Arranged Schoolroom.

Disorder, idleness, mischief, discomfort, ill-temper, disease—due to unfavorable physical conditions.
(This and three following cuts were loaned by Superintendent Payson Smith, of the Department of Education of the State of Maine.)



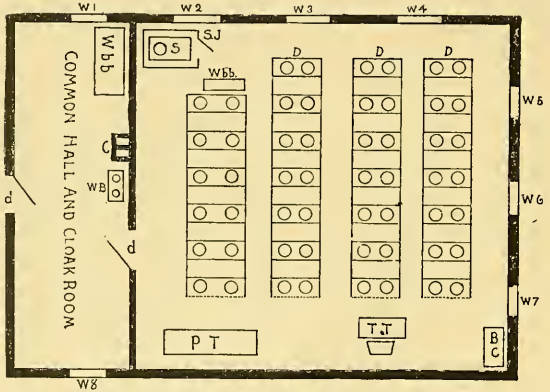
The Well Arranged Schoolroom.

Good order and industrious habits fostered, comfort and health promoted by favorable physical conditions.



Improperly Arranged One Room Schoolhouse.

B—Bench, C—Chimney, D—Desks, d—Door, S—Stove, T—Teacher's Table, W—Window.



An Improved Arrangement of Foregoing.

(Intended merely to suggest improvement in the foregoing—lighting and proportions of room not approved.)

B C—Bookcase, C—Chimney, D—Desk, d—Door, P T—Primary Pupils' Table, S J—Stove Jacket, S—Stove, T T—Teacher's Table, W—Window, W bb—Wood Boxes, W B—Water Buckets.

INTERIOR DECORATIONS.

In the general color scheme for the interior of school houses the floor should be the darkest surface except the blackboards. If there is a wainscot it should be of some lighter shade than the floor, and of the same shade as the casings. Above this the walls may be tinted with some light shade, as buff, gray, or green; and, if the room is particularly well lighted, olive may be used. But in every case a light shade of color should be used and in no case should a shade of red be allowed. The ceiling should be the lightest surface of the room in order to reflect as much light downward as possible.

A picture molding should be put up from which to hang the few good pictures which every school can have in time. Where there is a picture molding there is not so great a temptation to drive nails and tacks into the wall on which to hang the cheap and flashy colored calendars and other advertisements that so often are the only decorations. Reproductions of the old masters are to be obtained at so low a price now that there is no reason why each district may not have two or three.

The blackboards are not a part of the decorative scheme, although many teachers persist in so using them. They should be so placed that the light falls on them from one side only to avoid cross lights, and should never be placed between two windows, as is so often done. They should be of slate forty-two inches wide, and should be placed twenty-six inches above the floor in rural schools where all grades must use them. If slate should prove to be too expensive Hyloplate or Lithoplate will make a very good substitute at a lower price.

HEATING PLANTS.

STOVES.—The system of simplest and cheapest heating is stoves. The heat is carried by radiation and by convection without any tubes or pipes or other equipment. But for use in school houses the chief objections are: First:—Owing to the size of the rooms a stove as usually put up heats the air immediately about it too hot, while that farther away is not hot enough. Second:—The size of the stove is so great for a large room that considerable space is wasted. Third:—The amount of dirt and litter caused is greater than in any other system. Objection No. 1 may be disposed of by enclosing the stove in a sheet iron jacket and bringing in fresh air from the outside to a point immediately under the stove. With this arrangement and proper ventilating flues the best results can be obtained, so we shall only consider that type of stove.

FURNACES.—Next in original cost and in simplicity of operation is the hot air furnace. While furnaces are more costly than stoves they have the advantage of being out of the way, and of keeping most of the dirt in the basement, and of heating more than one room at a time. Having a cold air duct through which fresh air is constantly coming, rooms so heated are usually well ventilated but at the expense of fuel. But in windy weather it is sometimes very difficult to heat exposed rooms.

DIRECT STEAM.—Buildings heated by direct steam heat are kept at a uniform temperature without regard to which way the wind may be. But in school houses there must be some extra provision made for ventilation, with a consequent change in the amount of heating surface required. Compared with hot water heating, steam has the advantage of freedom from frozen pipes when the heat has been shut off for a day or two. But with this system of heating there is no way of regulating the amount of heat in mild weather, except by shutting off the steam and turning it on again at more or less frequent intervals.

INDIRECT STEAM.—In this system there is a combination of furnace and direct steam methods. Air is heated by coils of pipe containing steam and is then admitted to the rooms through registers. This provides a system of ventilation—an all important consideration in school buldings. It also has the advantage of being unaffected by winds, since the coils can be put at the bottom of the flue leading to any given room.

HOT WATER.—In any country where there is danger of pipes freezing this method is not practicable for school rooms.

In comparing the cost of the various systems it is better to consider the expense for a period of years. The original cost of stoves is least, with furnaces next, and steam last. But the expense of repairing and maintaining is greatest in stoves and furnaces and least in steam. Comparing original costs and assuming that the cost of stoves is 1, furnaces would be 1.5, and steam 2.

But for a period of five years covering initial cost, repairs and fuel, stoves 1, furnaces 1.3, and steam 1.4.

For fifteen years, covering initial cost, repairs and fuel, stoves 1 furnaces 1.1 steam .8.

Summarizing:—In buildings having a basement, for a long period of time steam proves cheapest, but where a basement would have to be added to contain the heating apparatus, and for small buildings in the country, the stove proves the cheapest and most efficient.

OUT BUILDINGS.

Each school should have two separate out house buildings, located in that part of the school grounds, at the farthest point from the main entrance of the school house, and as far apart as possible. They should be kept clean in every respect, and in good repair.

For the average school these buildings should be about 6 ft. square, and 7 or 8 ft. high, surrounded by a tight board fence 6 ft. high.

The vault under the building should be of some substantial material and plastered on the inside with cement. This prevents drainings into the soil and any possible contamination of the water supply. Such an amount of dry soil washes should be placed in the receptacle as will absorb all liquids in the vault, and keep the excreta covered. The vault should be thoroughly cleaned at least twice each term.

Proper urinal troughs should be provided in the boys' closet on the inside of the guard fence.

The outhouses should be provided with windows, the sills of which are not less than 5 ft. from the ground.

See cut, page 69.

ADVANTAGES OF BUILDINGS SUGGESTED IN THIS BOOK.

The SIZE of all rooms is the same—24 ft. x 30 ft. Such a room will easily seat 40 pupils. A teacher having charge of more than this number can not do satisfactory work—especially in a rural school. A room should be no wider than 24 ft., for the lighting would then be poor for pupils sitting at the farther side of the room.

A VESTIBULE is found in each building. This has its advantages at all times, and in a windy country especially is almost indispensible. Otherwise the wind would get a full sweep down the halls, whenever the outside door was opened.

Ample CLOAKROOMS are too often wanting in our school buildings. The offensive odors given off from cold damp wraps while drying are often very disagreeable and should never be brought into the study room. Cloak rooms which are shut off from the main school room, as well as protected from the outside cold, should be found in every building.

One CLOSET for the teacher's supplies, and one or two for pupils' lunch pails and other articles, are found in or adjoining each school room. These closets are each provided with lock and key.

A JACKETED STOVE is placed in the corner of each room, where it is in the way as little as possible. If the system of heating suggested is carefully carried out, all parts of the room will be equally well heated.

The LIGHTING is in batteries, and is uni-lateral, except in a few instances where it is necessary to add half windows for decoration only. The light is always from the left of the pupil. In case half windows are placed at the rear of the room, they should be of ground or stained glass, well shaded, so that the teacher need not face a strong light.

The TEACHER'S DESK is in front and on the lighter side of the room. In this position she does not obstruct the pupils' view of the front blackboard, and can see all of the pupils seated without looking directly toward the full light of the windows.

Plenty of BLACKBOARD space is a great advantage to both teacher and pupils. Uni-lateral lighting allows space for blackboards on two or even three sides of the room.

TRANSOMS are all hinged at the bottom to prevent cold air drafts from being forced down upon the pupils' heads.

FRESH AIR FLUES from the outside of the build-

ing must be equal in size to the cross section of both air vent and smoke flue, to provide the best ventilation.

The VENTILATING FLUES are of sufficient capacity to take out the foul air. They must always be heated to be of any value in exhausting air. Consequently they are built in connection with the smoke flue, and on the inside walls to be of greatest value. At the base of each air shaft is a register through which the cold and the foul air of the room is drawn into the ventilating flues.

GENERAL CONDITIONS.

Contract Drawings.—The drawings which will with these specifications form the basis of an agreement for the erection of a public school building, for District No. ( ), are numbered consecutively, and are drawn to a scale of ¼ in. to the foot. The drawings consist of Floor Plans, Foundations, and Roof Plans—four elevations, a cross section, and miscellaneous details.

Changes.—No alterations shall be made involving change in cost, until the same is fully set forth in writing; and the terms and conditions of which are fully understood and signed by both parties to this contract.

Responsibility of Contractor.—The contractor is to be entirely responsible for producing the finished work in place; and in carrying it out, he is to furnish all tools and appliances with which to carry out the work. If plastering is done in cold weather, he shall keep the temperature above the freezing point, and if in hot weather, he shall close all the openings, so that the plaster will not crack from drying too fast. The contractor is to be responsible for all material delivered on the site both before and after it is put into the building, and as this claim covers loss by fire, he is to keep the material insured until the last payment is made to him by the owner, as evidence that the work is accepted.

Contractor's Foreman.—If the contractor does not personally superintend the work, he shall have a competent foreman on the ground at all times when the work is going on.

The contractor is to be responsible for any damage done to adjoining property, such as buildings, fences, bridges, trees, lawns, sidewalks, etc. The contractor shall comply with all city laws and ordinances, and arrange for the use of all streets and water privileges if necessary.

MASONRY.

Concrete.—The concrete work of all footings and outside walls below grade, shall be composed of one part of good fresh Portland cement, three parts of clean sharp sand and six parts of gravel or broken stone that will pass through a two inch screen. In order to make this proportion efficient, it will be necessary to mix the cement and sand dry, turning it over at least four times, or until no uncolored particles of sand can be detected—after which, add just enough water to dampen the mass thoroughly, then add the gravel and mix wet—and put in place.

Brick Work.—Rough brick partition walls in basement, and all chimneys and the backing of all exterior walls shall be laid and thoroughly embedded in Portland cement. Mortar to be one part cement to four parts sand, and all brick are to be drenched with water before being laid. Face brick shall be used for the visible surfaces of all walls and chimneys. All work to be properly bonded and laid with ⅛ to ¼ inch joints, trowel pointed as the work is laid, and all mortar kept off the face.

After all brick work is done, all outside surfaces are to be washed with muriatic acid, diluted with water, 1 part in 10.

Provide and build into each brick ventilating flue a coarse wire screen placed just below the opening of the register, so that a lamp may be placed thereon, for heating the column of air in the ventilating flue .

Provide and build into the chimney an 8 in. x 8 in. clean-out door at the most convenient place.

What ever bond is used, see that the outside and inside brick walls are firmly bound together at suitable distances. Build into the brick walls, around all the openings, at least four wooden brick on each side, on which to nail the casing. Build into the walls at the top and the bottom of the base, a string of 2 in. x 4 in.s on which to nail the base.

Where stairways follow brick walls, build in 2 in. x 4 in. to receive the finish, also provide nailing pieces in closets.

The plate on top of all outside brick walls is to be a 2 in. x 8 in., bolted to the wall with ¾ in. x 24 in. bolt built into the wall with a large washer, or a piece of 2 in. x 4 in. at the lower end, and washer and nut on the top of the plate.

CARPENTER WORK.

Material. All rough lumber such as Girts, Joists, Studding, Rafters, etc., are to be straight, sound, and free from large knots. Other miscellaneous lumber, such as bridging, sheeting, braces, etc. is to be sound so as to hold a nail firmly. Lumber for frames and grounds must be sound and square edged. Floors and base will be of A 1 Best grade of Yellow Pine. The casings may be made of soft pine. The stair treads are to be 1¼ in. thick.

Carpenter Construction.—All girts are to rest on 12 in. x 12 in. piers made of brick or cement stone.

All joists are to be set one foot four inches from center to center with a bearing on all supporting walls of four inches. When in brick walls the ends of the joists are to be leveled so that the upper edge is just on a line with the inside of the brick. All trimmers are to be doubled, and all headers over 10 ft. long, are to be tripled.

Every third joist in the brick wall is to be anchored thereto by a strap anchor of iron in shape of a T extending two feet on the joist, and to within 4 inches of the outside of the wall, well spiked on to the joist, and built into the wall.

All joists are to be crossbridged with 1 in. x 6 in. material. In spans of 12 feet or over, use 10 ds. nails in each end of each piece of bridging.

Studding are to be placed 1 ft. 4 in. from center to center, and in all frame buildings to have a run of brace bridging of 2 in. x 4 ins. run both ways to each corner. All slates on the outside walls are to be doubled and joints broken; inside walls are to have a bottom plate.

Where double floors are used the first floor may be laid before plastering.

Plank frames may be used for sash under the first floor; all other frames to be of soft pine ⅞ in. thick. All plank door frames to be rabbeted to receive doors.

Floors.—All finish floors are to be nailed over each joint with 8 ds. nails, and are to be laid after all other finish, except the base, is complete. All finish work on the inside is to have the nails set, ready for puttying.

Shingle Roofs.—Where shingles are used for roofing, the sheeting may be laid with 1¼ in. space between boards, except over the cornice where the sheeting should be laid of matched and surfaced boards, or flooring. Shingles are to be laid 4½ in. to the weather, and at least two nails to each shingle of 4 in. width. All hips are to be covered on top of shingles with galvanized iron ridge roll, or a saddle board made of 4 in. shingles.

Ridges are to be finished with ridge roll, or 6 in. saddle boards.

Tar and gravel roofs are made of three thicknesses of heavy tar felt, lapped 6 in. and hot tar put in the laps. All to be covered with two inches of gravel, put on hot in a bed of hot tar.

No painting has been figured in the cost estimate given.

Painting.—Before any painting is done, all knots and places colored by the sap should be killed with a good coat of shellac. The first or priming coat should be put on as soon as possible after the carpenter gets it up.

The first coat should contain a large portion of white lead, which will adhere to the new wood better than any other substance, and will retain the second coat well. Pure linseed oil should be used, after the prime coat is put on; all holes and cracks should be stopped with putty. Putty should be colored to suit the grain of the wood, in light and dark places, where oil finish is used.

HARDWARE.

The door locks should all be Mortise locks, and the door locks, window locks, and also all the door butts should be of a uniform finish, as "Old Copper," "Bronze," and so forth. Use common wire nails in all sizes, and use plenty of them. A common fault is poor nailing.

ALL WORK must be done in the best, most approved, and workmanlike manner. The foundations must be laid up level, plumb, and true. The floors must all be leveled. The door and window frames must be set plumb, and must be level at the head. The doors must close easily, and without binding, and good joints must be made in all work.

Floor Plans,

Elevations,

Bills of Material,

Estimates of Cost.

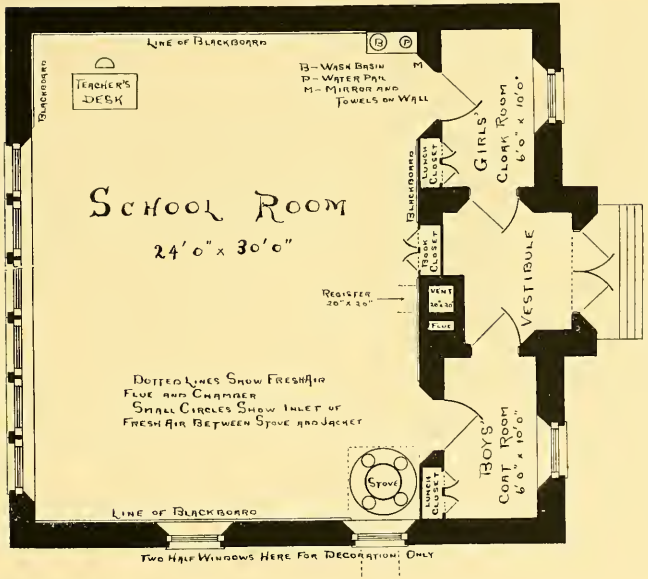
ADOBE—ONE ROOM.

Floor Plan No. 1 and Elevation No. 1.

East or west light is considered best for school buildings in New Mexico. This building should be set, therefore, so as to face one of these directions. In the event that your building must face north or south, plan No. 3, page 45, might well be followed. In many instances, brick or frame plans may be used for adobe, and vice versa.

Ventilating flues, supply closets, wash benches, etc., are as essential in small school buildings as in large ones.

The cost of this building will range from $400.00 to $900.00 ,depending upon material, strength of floors, etc. See page 70 for estimate of costs and page 71 for specifications.



FLOOR PLAN No. 1
FOR A
ONE-ROOM ADOBE BUILDING

DIMENSIONS (OUTSIDE)—31' 8" x 32' 6"—FRONT PROJECTION—2' x 10'
WALL—16" THICK

ADOBE—ONE ROOM.

Design No. 1, or elevation No. 1, is suggested for Floor Plan No. 1 on the preceding page. A plain exterior is outlined in order that the expense of the building may not be too great for districts having but small funds for building purposes. Note the half windows at the side, placed above the blackboard line. If this side of the building is not exposed, or is little seen, the windows may be left out. They are entered for relief only. Of course, the builder may relieve the plain exterior by constructing circular, oval, oblong, square, keystone, or other forms on the surface, and thus save the expense of windows.

For a more attractive exterior, we would refer you to Floor Plan No. 2, page 57, and Design or Elevation No. 2, page 59. The adobe may be used in this plan for frame, but the specifications for it on page 79 would not apply

Design No. 1

FOR A

One-Room Adobe Building

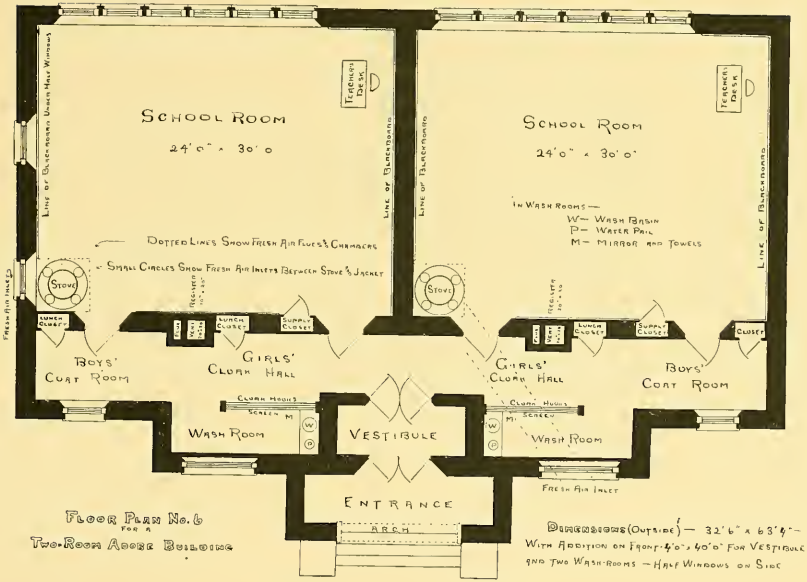
ADOBE—TWO ROOMS.

Floor Plan No. 6 is practically two No. 1 Plans placed side by side. An advantage in constructing a building with uni-lateral lighting is found in the fact that additional rooms may be provided without interfering with the conveniences of the original structure. The two wash rooms in this building are very great conveniences. This building should face east or west.

The cost will vary from $700.00 to $1,650.00 depending upon class of material, nature of finish, etc.

See estimates of cost, page 70, and detailed specifications page 73.

The same might be said concerning the half windows on the side as is noted on the second page preceding.



FLOOR PLAN No. 6
FOR A
TWO-ROOM ADOPT BUILDING

DIMENSIONS (OUTSIDE) — 32' 6" × 63' 4" —
WITH ADDITION ON FRONT 4' 0" × 40' 0" FOR VESTIBULE
AND TWO WASH-ROOMS — HALF WINDOWS ON SIDE

ADOBE—TWO ROOMS.

$700.00 to $1,650.00.

Design No. 6, or Elevation No. 6, is a beautiful exterior suggested for Floor Plan No. 6. It shows a frame roof which is somewhat more expensive than a flat one. A flat roof such as is shown in Design No. 1 for a one room building might be used and the expense of the building very much reduced. Design No. 6, however, is graceful and wherever the school fund will permit, the board of directors should construct an attractive building. The school building and the grounds about it should be as beautiful as any home in the district. It should be a source of pride to every patron.

If the location requires a north or south front, Floor Plan No. 4 and Elevation No. 4 or Floor Plan No. 5 and Elevation No. 5 may be used. They are found on pages 49, 51, 61, 63.

FRONT ELEVATION FOR A TWO-ROOM ADOBE BUILDING
NO. 16

ADOBE—THREE ROOMS.

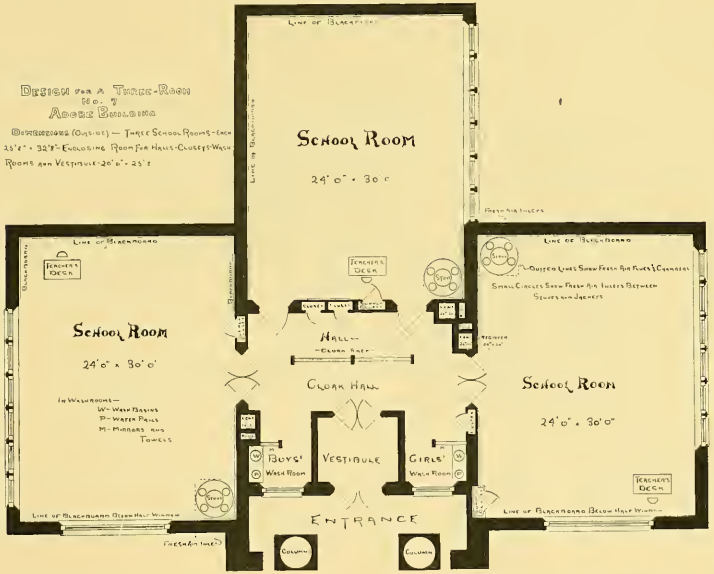
Floor Plan No. 7 is a combination of Plans 1 and 6, enclosing a space for wash rooms, closets, and halls, in the center of which is found a large wire screen cloak rack. A fourth room might easily be added at the upper left of the plan having a separate entrance at the left, and a hall and cloak room between the additional room and the left room shown.

This building should face north or south for the best light. If local conditions require an east or a west facing, Plan No. 8 is suggested.

The cost of a building constructed on these plans will be from $1,300.00 to $2,100.00.

See estimates, page 70, and specifications page 75.

Note that the large arch windows are for decoration or relief only. Wall surface decorations may be substituted or the walls may be plain if good sized trees stand close in front of the points where the windows are shown.


DESIGN FOR A THREE-ROOM SCHOOL BUILDING
DIMENSIONS (OUTSIDE) — THREE SCHOOL ROOMS-EACH 25'6" × 32'8"-ENCLOSING ROOM FOR HALLS-CLOSETS-WASH ROOMS AND VESTIBULE-26'6" × 25'2"
SCHOOL ROOM
24' 0" × 30' 0"
SCHOOL ROOM
24' 0" × 30' 0"
SCHOOL ROOM
24' 0" × 30' 0"
HALL
CLOAK HALL
VESTIBULE
BOYS' WASH ROOM
GIRLS' WASH ROOM
ENTRANCE
TEACHER'S DESK
STOVE
LINE OF BLACKBOARD
LINE OF BLACKBOARD BELOW HALF WINDOW
IN WASHROOMS—
W-WASH BASINS
P-WATER PAILS
M-MIRRORS AND TOWELS
QUEEN LUKE SMOKE FREE AIR FLUES & CHIMNEYS
SMALL CIRCLES SHOW FRESH AIR INLETS BETWEEN SEWERS AND JACKETS

ADOBE—THREE ROOMS.

$1,300.00 to $2,100.00.

This pleasing Mission exterior for Floor Plan No. 7. preceding page, is much less expensive and fully as satisfactory in every way as a frame roof would be. Flat roofs, too, are an advantage when additional rooms are desired.

For the rather expensive arch windows there might be substituted wall surface ovals, in relief or receding, broken by four keystones. If the windows are used, the glazing should be of ground glass or stained glass, and window shades should be drawn over them at all times during school hours, in order that no light may enter to try the eyes of the pupils. Note that these windows are set above the blackboard line. Face the building north or south.

FRONT ELEVATION — THREE ROOM ADOBE BUILDING

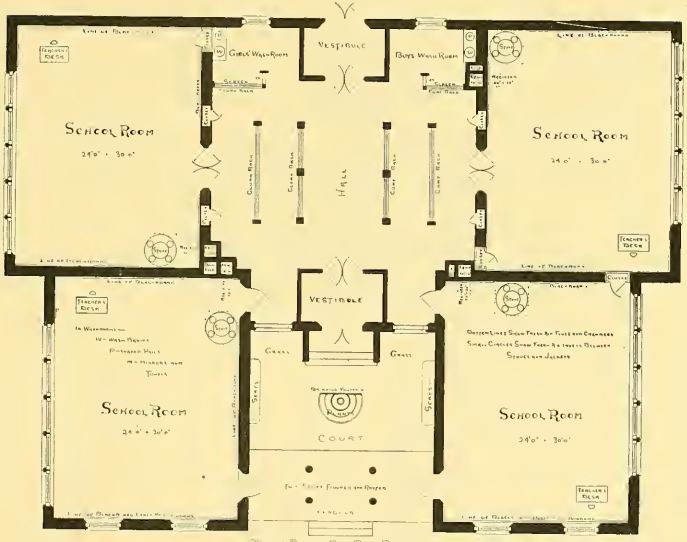
No. 7

ADOBE—FOUR ROOMS.

Floor Plan No. 9 is suitable for a village school. It is arranged for north or south front; has front and back entrances, ample hall space, plenty of coat room, two wash rooms, and closets for each room. Between the two front rooms is a court, with seats and a drinking fountain, entered through a roofed porch or pergola. The general appearance of the building is good, and it is not nearly so expensive as the ordinary four room building found in villages.

The cost is about $3,000.00. See estimates, page 70, and specifications page 77.

Note the four half windows above the blackboard line for relief of the plain wall.


School Room
24'0" × 30'0"
Girls' Wash Room
Vestibule
Boys' Wash Room
Hall
School Room
24'0" × 30'0"
Teacher's Desk
Vestibule
School Room
24'0" × 30'0"
Court
School Room
24'0" × 30'0"
Teacher's Desk

No 9

ADOBE—FOUR ROOMS.

Approximately $3,000.00.

This Front Elevation No. 9 is a very attractive Mission type.

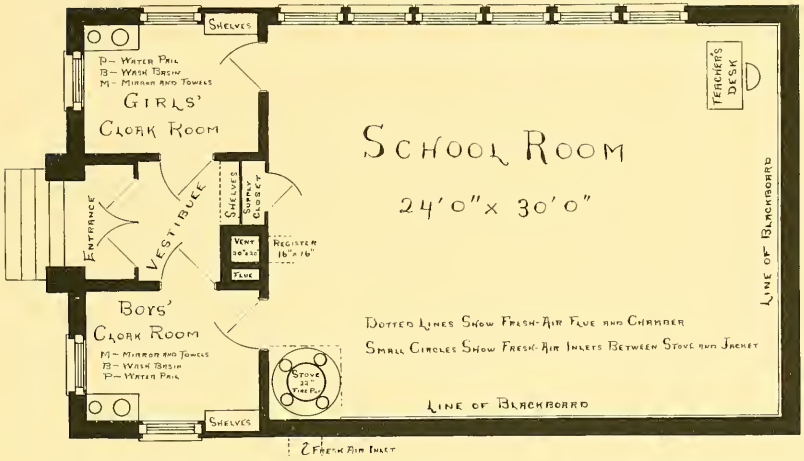
For proper lighting, this building should face north or south. If your building must face east or west, we would suggest consideration of the brick building pages 53 and 55, Floor Plan No. 10 and Elevation No. 10.

FRONT ELEVATION FOR A FOUR-ROOM ADOBE BUILDING
No. 3

BRICK—ONE ROOM.

Floor Plan No. 3 has the same general characteristics as the preceding plans. The building should face north or south. For plans of a one room building to face east or west, see Floor Plan No. 1 (Adobe) page 29, and Elevation No. 1, page 31, or Floor Plan No. 2 (Frame) page 57, and Elevation No. 2, page 59.

The cost of this one room brick complete, with everything of first class material, is about $1,200.00. See estimates page 70, and specifications page 88.



FLOOR PLAN NO. 3

FOR A

ONE-ROOM BRICK BUILDING

DIMENSIONS (OUTSIDE)— SCHOOL ROOM - 25'0" x 31'6" WITH ADDITION IN FRONT FOR VESTIBULE AND TWO CLOAK ROOMS - 11'0" x 25'0"

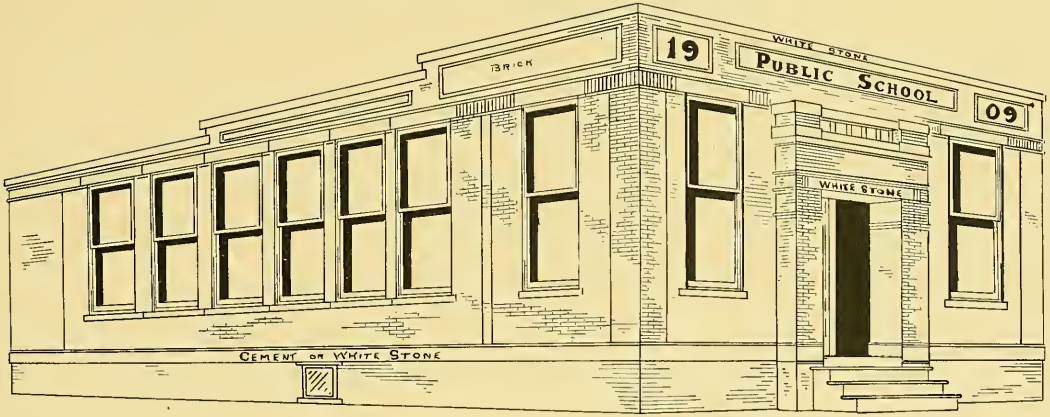
BRICK—ONE ROOM.

Cost, Approximately $1,200.00.

Design No. 3 shows a rather plain exterior which in the structure is much more satisfactory than in the cut.

Note the battery of light at the left. Windows for all school rooms should be arranged in this way.

Face this building north or south.



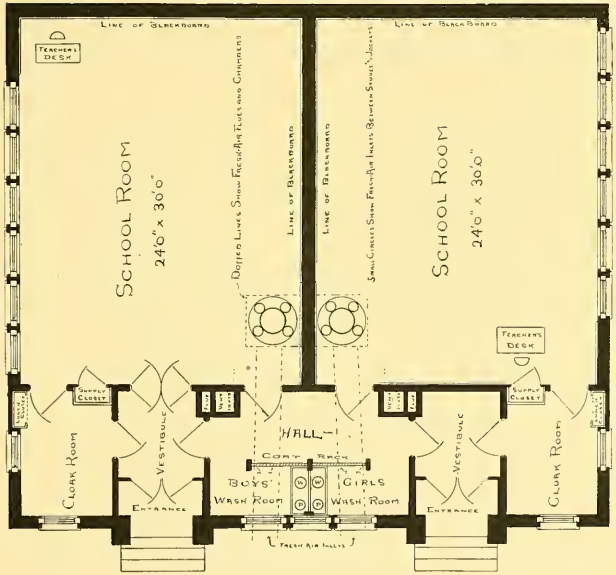
DESIGN No. 3

FOR A

ONE-ROOM BRICK BUILDING

BRICK—TWO ROOMS.

This Floor Plan No. 4 is a combination of two No. 3's, one of which is reversed. The building should face north or south. The cost is estimated at from $1,800 to $2,000. See estimates, page 70, and specifications page 90.



FLOOR PLAN NO. 4

FOR A

TWO-ROOM BRICK BUILDING

DIMENSIONS (OUTSIDE) — 42'4" x 49'0" — INCLUDING TWO SCHOOL ROOMS 24'0" x 30'0" — TWO CLOAK ROOMS 8'0" x 10'0" — TWO VESTIBULES AND ENTRANCES 8'0" x 10'0" — HALL AND WASH ROOMS 10'0" x 16'0"

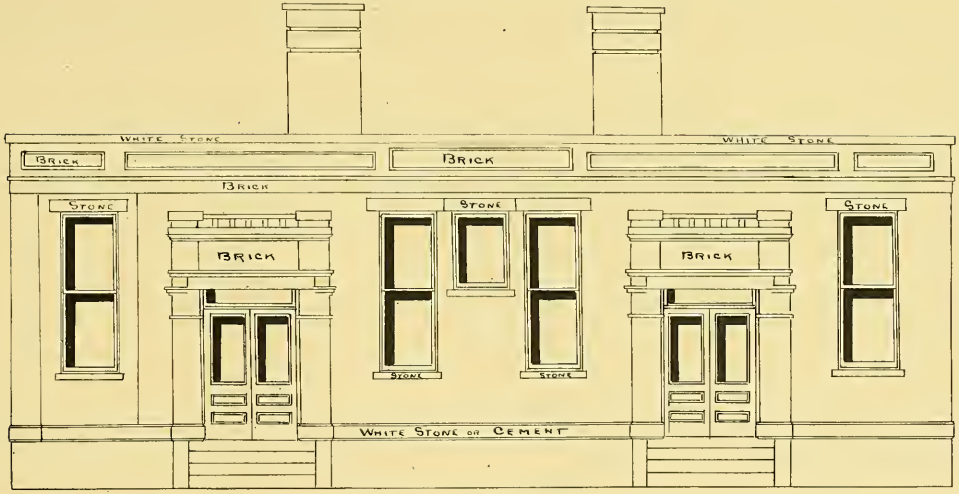
BRICK—TWO ROOMS.

$1,800.00 to $2,000.00.

Elevation No. 4 appears much more attractive in the building than in the cut.

Face the building north or south.

For plans of a two room building to face east or west, see Floor Plan No. 6, (Adobe) page 33.



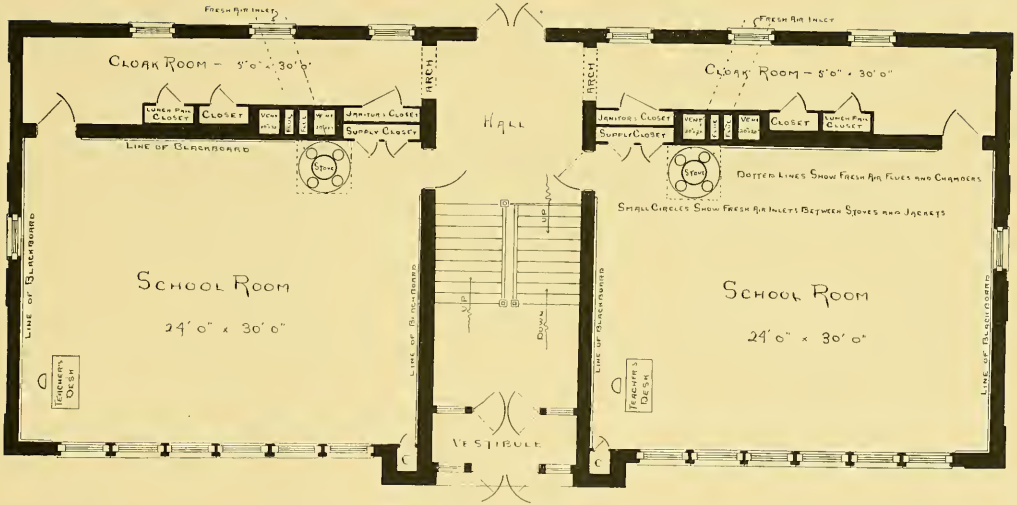
DESIGN FOR A TWO-ROOM BRICK BUILDING
NO. 4

BRICK—FOUR ROOMS—TWO STORIES.

Floor Plan No. 10 is the first floor plan of a four room, two story, brick, with full basement. The second floor plan is not shown but it is practically a duplicate of the first. The vestibule should be on the street level, and a principal's office should be placed above it on the half-landing between the first and second floors.

This building may easily become an eight room building by building at the back the exact duplicate of these plans. The three windows in each cloak room would be closed and one window placed at the end of each room.

Cost is estimated at about $7,000.00. See estimates, page 70 and specifications, page 92.



FIRST FLOOR PLAN FOR A FOUR-ROOM BRICK BUILDING
No. 10

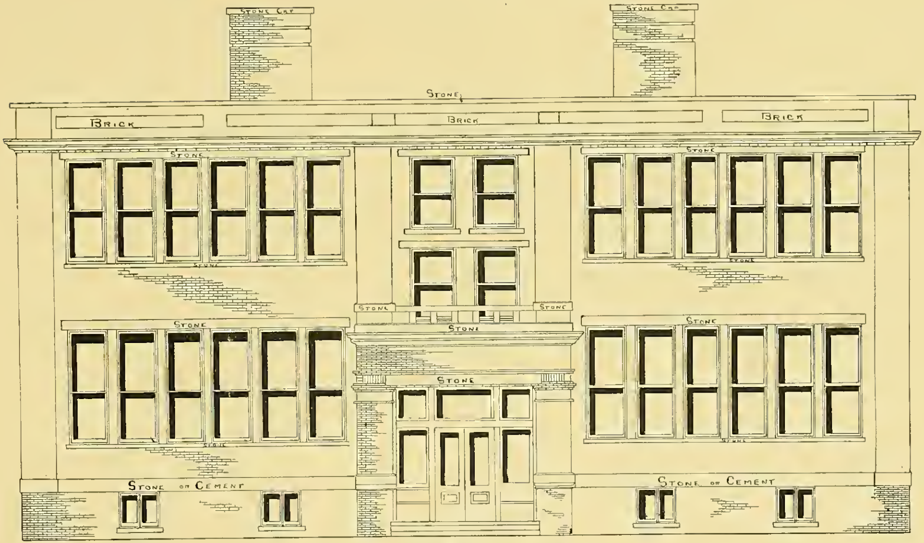
BRICK—FOUR ROOMS.

Cost, Approximately $7,000.00.

Elevation No. 10 shows flat roof and four batteries of light.

Note that the vestibule is on the street level. Office windows are shown just back of stone battlement over vestibule.

This roof needs no remodelling when it is desired to make this building one of eight rooms.



No. 10

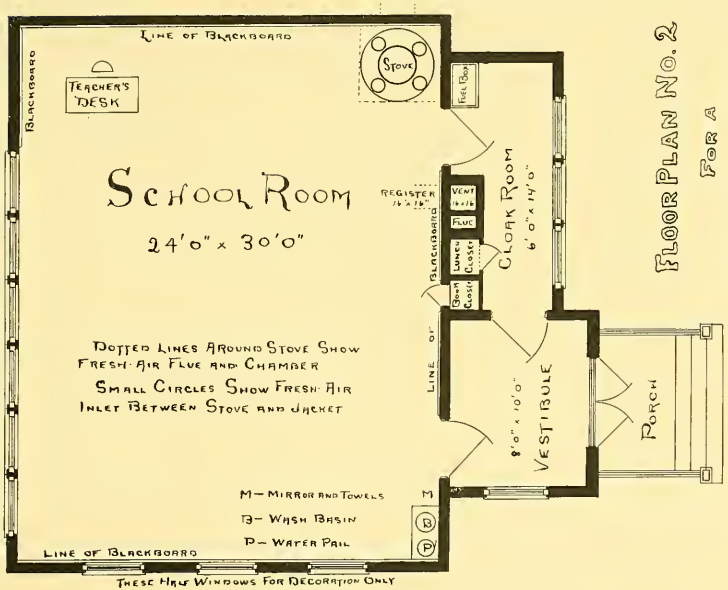
Front Elevation for a Four-Room Brick Building

FRAME—ONE ROOM.

Floor Plan No. 2 is an excellent one for a one room frame building.

The building should front east or west. Note that the three half windows on the left are above the blackboard line and may be left out if this side of the house is unexposed.

The cost of this building with the beautiful elevation shown next is estimated to be from $900.00 to $1,100.00. See estimates, page 70, and specifications, page 79. The large amount of roof projection adds to the cost of this plan.


LINE OF BLACKBOARD
BLACKBOARD
TEACHER'S DESK
STOVE
FUEL DOOR
SCHOOL ROOM
24'0" x 30'0"
REGISTER 16"x16"
VENT 16"x16"
FLUE
BLACKBOARD
LUNCH CLOSET
COAT CLOSET
CLOAK ROOM
6'0" x 14'0"
DOTTED LINES AROUND STOVE SHOW FRESH AIR FLUE AND CHAMBER
SMALL CIRCLES SHOW FRESH AIR INLET BETWEEN STOVE AND JACKET
LINE OF
8'0" x 10'0"
VESTIBULE
PORCH
M—MIRROR AND TOWELS
B—WASH BASIN
P—WATER PAIL
M
B
P
LINE OF BLACKBOARD
THESE HALF WINDOWS FOR DECORATION ONLY
FLOOR PLAN NO. 2
FOR A
ONE-ROOM FRAME BUILDING
DIMENSIONS (OUTSIDE)— SCHOOL ROOM - 24'0" x 30'0" WITH
ADDITIONAL CLOAK ROOM - 6'0" x 14'0" AND VESTIBULE 8'0" x 10'0"

FRAME—ONE ROOM.

Cost, Approximately $1,000.00.

Design No. 2 is a beautiful exterior.

See notes on previous page as to expense.

The building should face east or west. For a one room plan for north or south front, see Floor Plan No. 3, (Brick), page 45.

DESIGN No. 2.

FOR A

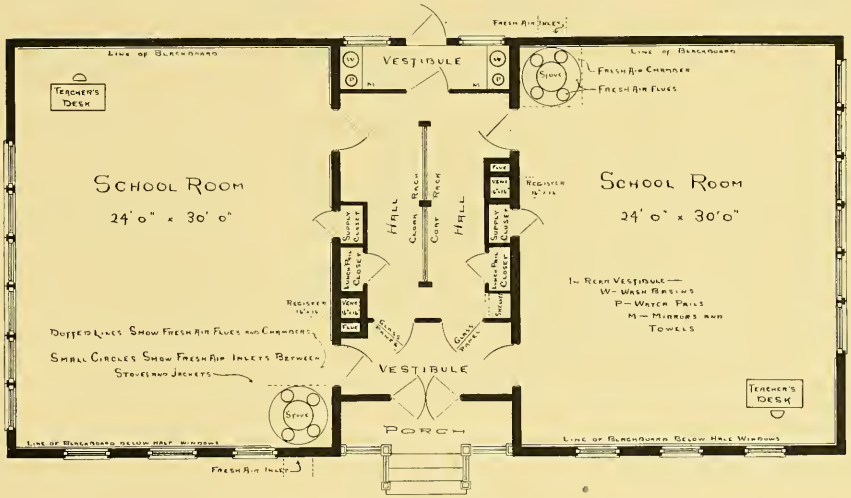
ONE-ROOM FRAME BUILDING.

FRAME—TWO ROOMS.

Floor Plan No. 5 is one which will undoubtedly be satisfactory to a great majority of Boards desiring to build a two room school house. The plan is one to which two additional rooms may readily be added. It should front north or south. For a plan of a two room building to face east or west, see Floor Plan No. 6 (Adobe), page 33.

Cost is estimated to be from $1,500.00 to $1,800.00. See estimates page 70, and specifications, page 82.

The three half windows in each room above the blackboard should be close curtained during school hours.



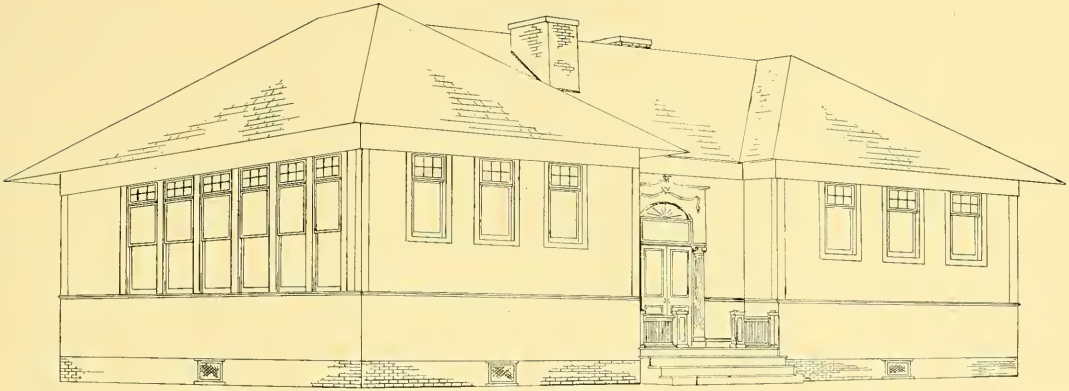
FLOOR PLAN FOR A TWO-ROOM BUILDING
NO. 5

DIMENSIONS—30' 0" x 60' 0" (OUTSIDE)—INCLUDING TWO SCHOOL ROOMS 24 0 x 30 0—HALLS AND VEST IBULES 12'0" x 30'0"

FRAME—TWO ROOMS.,

Cost, $1,500.00 to $1,800.00.

Design No. 5 is a very plain but pleasing exterior. A large sheltered porch might be added at small expense. Face this building north or south—preferably south.



DESIGN FOR A TWO-ROOM FRAME BUILDING
NO. 5

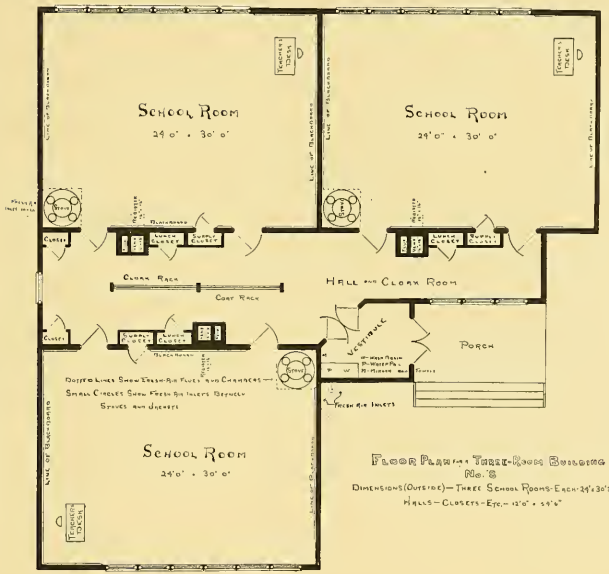
FRAME—THREE ROOMS.

Floor Plan No. 8 is one which may readily become a four room plan.

The building should face east or west.

Cost, estimated at $2,400.00. Specifications, page 85.

For a three room plan facing north or south, see Floor Plan No. 7 (Adobe), page 39.


School Room
24' 0" × 30' 0"
School Room
24' 0" × 30' 0"
School Room
24' 0" × 30' 0"
Hall and Cloak Room
Porch
Vestibule
Cloak Rack
Coat Rack
Teacher's Desk
Teacher's Desk
Teacher's Desk
Blackboard
Blackboard
Blackboard
Line of Blackboard
Line of Blackboard
Line of Blackboard
Line of Blackboard
Line of Blackboard
Stove
Stove
Stove
Closets
Closets
Dotted Lines Show Foul Air Flues and Channels
Small Circles Show Fresh Air Inlets Beneath
Spaces and Registers
Floor Plan of Three-Room Building
No. 6
Dimensions (Outside)—Three School Rooms Each 24' × 30'
Halls—Closets—Etc.—12' 0" × 59' 6"

FRAME—THREE ROOMS.

Cost $2,400.00.

By removing the tower and the porches, Design No. 8 may be changed into a four room building.

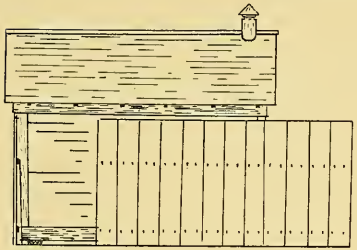
If the building is to be so located that the blank walls on either side of the porch should be relieved, half windows might be entered above the blackboard line and close curtained.

The batteries of light in this building should face east or west.

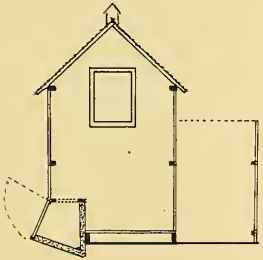
DESIGN FOR A THREE-ROOM FRAME BUILDING
No. 8

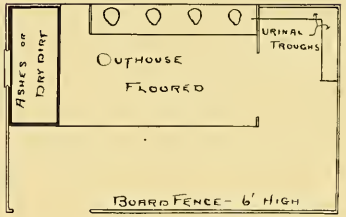
OUTBUILDING.

Too great care can not be taken in the location and construction of the outhouses. See article, page 21. When properly located and properly constructed, special attention should be given to their care. No one thing speaks more strongly in favor of or against a Board of Directors and the teacher than the condition of the outhouses. They should be in such condition at all times that the teacher would not hesitate to call the attention of any patron of the district to them.



OUT BUILDINGS
ELEVATION
CROSS SECTION
AND PLAN





ESTIMATED COSTS OF BUILDINGS SHOWN IN CUTS.

Adobe Buildings.

	Material.	Labor.	Total.
One room	$ 600	$ 300	$ 900
"	375	175	550
"	250	125	375
Two Room	1100	550	1650
"	685	340	1025
"	455	230	685
Three Room	1400	700	2100
"	870	430	1300
Four Room	1875	950	2825

Frame Buildings.

One Room	750	280	1030
"	650	240	980
Two Room	1250	460	1710
"	1050	400	1450
Three Room	1725	650	2375

Brick Buildings.

One Room	850	335	1185
"	775	325	1100
Two Room	1400	575	1975
"	1250	525	1775
Four Room	4900	2000	6900

Work and Material of all buildings estimated—Col. 1—of first class.

Adobes.

Estimate 1.—Material and work first class in every respect—16 in. walls—cement footings—brick veneer foundations—three foot fire wall with stone cap course—stone window caps and sills, double floor—windows hung with weights—wide casings—walls and ceiling plastered inside—outside all cement plastered or pebble-dashed—shingle roof on two room building—tar and gravel roofs on others.

Estimate 2.—Differs from Estimate 1 in the following respects: Fire wall not so high—wood or cement substituted for all stone—single floor—inside walls rounded to front, plastered with adobe and papered—canvass ceilings.

Estimate 3.—Material second grade—wall entirely of adobe.

Frame.

Estimate 2.—Dimension timber of light material. Cement footings—rough floor and rough sheeting on walls omitted.

Brick.

Estimate 2.—Fire walls not so high—wool and cement caps and sills instead of stone.

BILL OF MATERIAL FOR A ONE ROOM ADOBE SCHOOL HOUSE.

Footings—Foundation—Walls—Chimney.

Cement, 20 bbls.
Brick, 5,000.
Adobes, 9,600.
Lime, 40 bbls.
Sand, 35 yds.
Broken rock, 13 yds.
1 stone chimney cap.
10 stone window sills—4 in. x 8 in.—42 ft.
2 pieces of screen wire for fresh air inlet.—24 in. x 24 in.

FRAMING TIMBER.

Girts—2 pieces, 6 in. x 6 in.—16 ft.
Floor Joists—48 pieces 2 in. x 10 in.—12 ft.
12 " 2 in. x 10 in.—16 ft.
Ceiling Joists—24 " 2 in. x 8 in.—24 ft.
10 " 2 in. x 8 in.—16 ft.
Studding, 6 pieces, 2 in. x 4 in.—16 ft.
Rafters—24 " 2 in. x 6 in.—24 ft.
10 " 2 in. x 6 in.—16 ft.
Bridging, 6 " 1 in. x 6 in.—16 ft.
Braces—24 " 1 in. x 6 in.—12 ft.
6 " 2 in. x 4 in.—18 ft.
Sheeting.
Roof, 1,024 ft.
Rough floor, 1,024 ft.
Ventilating flue and chamber—Flooring—40 ft.
9 squares of 5-ply tar and gravel roof.
Steps made of cement.
Windows:—8 windows, 10 in. x 18 in.—12 lights.
2 sash 10 in. x 18 in.—6 lights.
10 transoms, 34 in. x 22 in.—3 lights.
Doors-:—2 front doors—sash—2 ft. 6 in x 7 ft.

INTERIOR FINISH WORK.

Flooring, 1,240 ft.
Base, 184 ft.
Quarter round, 184 ft.
Doors—4 panel doors, 3 ft. x 7 ft.
3 " " 2 ft. 6 in. x 6 ft. 6 in.
Shelving, 3 pieces, 1 in. x 12 in.—16 ft.
Doors and window frames—5 pieces, 1½ in. x 8 in.—14 ft.
1 " 1½ in. x 8 in.—18 ft.
1 " 1½ in. x 8 in.—12 ft.
Jambs—30 pieces, 1 in. x 5 in.—18 ft.
Header—5 " 1 in. x 5 in.—12 ft.
1 " 2 in. x 8 in.—12 ft.
Parting stop, 240 ft.

Mould, 240 ft.
Stool, 100 ft.
Casing, 530 ft.
Hook strips, 1 in. x 4 in.—100 ft.
Chalk troughs, 72 ft.
Cap mould, 72 ft.
Panel mould, 72 ft.

LATH AND PLASTER.

Lath, 1,800.
Plaster, 38 sacks.
Cement for outside walls, 40 sacks.
Sand, 15 yds.

HARDWARE.

Nails— 50 lbs. 20 ds. common.
50 " 16 " "
150 " 10 " "
100 " 8 ds. flooring.
15 " 3 ds. lath.
10 " 10 ds. casing.
10 " 8 ds. "
5 " 6 ds. "
4 " 4 ds. "
2 " 3 ds. casing
24 sheets of No. 1 sand paper.
1 front door lock.
4 Mortise locks.
3 pairs door butts, 4 in. x 4 in.
4 " " " $3\frac{1}{2}$ in. x $3\frac{1}{2}$ in.
3 " " " 3 in. x 3 in.
30 sash pulleys.
10 sash locks and lifts.
500 pounds of window weights.
200 ft. sash cord.
4 doz. cloak hooks.

BILL OF MATERIAL FOR A TWO ROOM ADOBE BUILDING

Footings—Foundations—Walls—Chimney.

Cement, 28 bbls.
Brick, 7,000.
Adobes, 17,000.
Lime, 70 bbls.
Sand, 56 yds.
Broken stone, 20 yds.
4 screens for air inlets, 24 in. x 24 in.
2 stone chimney caps.
2 stone sills, 7 ft.
16 " " 3 ft. 6 in.

FRAMING TIMBER.

Girts –2 pieces, 6 in. x 6 in.—16 ft.
2 " 6 in. x 6 in.—14 ft.
Floor Joists—8 pieces, 2 in. x 10 in.—16 ft.
96 " 2 in. x 10 in.—12 ft.
30 " 2 in. x 10 in.—10 ft.
Ceiling Joists—48 pieces, 2 in. x 8 in.—26 ft.
8 " 2 in. x 8 in. x 12 ft.
30 " 2 in. x 8 in.—10 ft.
Closet studding—12 " 2 in. x 4 in.—16 ft.
Plates—9 pieces, 2 in. x 8 in.—16 ft.
9 " 2 in. x 8 in.—14 ft.
8 " 2 in. x 8 in.—14 ft.
Rafters—14 " 2 in. x 6 in.—24 ft.
17 " 2 in. x 4 in.—18 ft.
60 " 2 in. x 4 in.—16 ft.
Bridging, 12 pieces, 1 in. x 6 in.—16 ft.
Sheeting, roof, 3,200 ft.
Rough floor, 2,700 ft.
Shingles, 23,000
Ventilating flues and chambers, flooring, 180 ft.
Steps made of cement.
Windows—14 windows, 30 in. x 36 in.—2 lights.
2 sash 30 in. x 36 in.—1 light.
2 " 62 in. x 42 in.—1 "
16 transom windows, 34 in. x 22 in.—3 lights.
1 " " 66 in. x 22 in.—6 "
Doors, 2 front doors, sash 2 ft. 6 in. x 7 ft.

INTERIOR FINISH.

Flooring, 2700 ft.
Base, 360 ft.
Quarter round, 360 ft.
Doors—2 sash, 2 ft. 6 in. x 7 ft; 4 panel, 3 ft. x 7 ft; 6 panel, 2 ft. 6 in. x 6 ft. 6 in.
Shelving—6 pieces 1 in. x 12 in.—16 ft.

DOOR AND WINDOW FRAMES.

Jambs—3 pieces 1 in. x 5 in.—12 ft.
48 " 1 in. x 5 in.—18 ft.
Headers—3 " 1 in. x 5 in.—16 ft.
2 " 1½ in. x 6 in.—18 ft.
1 " 1½ in. x 6 in.—10 ft.
4 " 1½ in. x 6 in.—14 ft.
1 " 1½ in. x 6 in.—12 ft.
4 " 1 in. x 6 in.—14 ft.
1 " 1 in. x 6 in.—12 ft.
Door casing, 300 ft.
Window " 840 ft.
Closet " 100 ft.
Hook strips, 200 ft.
Chalk troughs, 144 ft.
Cap mould, 144 ft.
Panel mould, 144 ft.
Stop, 480 ft.
Mould. 480 ft.
Stool, 200 ft.

LATH AND PLASTER.

3,720 lath.
53 sacks of plaster.
Cement for outside walls.
21 loads of sand.

HARDWARE.

2 registers, 20 in. x 20 in.
2 flue thimbles.
1 front door lock.
4 mortise locks.
6 rimlocks.
72 sash pulleys.
18 sash locks and lifts.
720 lbs. sash weights.
360 ft. sash cord.
8 doz. cloak hooks.
16 transom lifts.
Nails—100 lbs, 20 ds. common.
100 " 16 " "
200 " 10 " "
200 " 8 " flooring.
25 " 3 " lath.
2 " 1¼ " brads.
20 " 10 " casing.
20 " 8 " "
10 " 6 " "
8 " 4 " "
4 " 3 " casing.
Door butts—6 pairs of 3 in. x 3 in. door butts.
4 " " 3½ in. x 3½ in. door butts.
6 " " 4 in. x 4 in. door butts.
14 " " 2½ in. x 4 in. transom butts.
36 sheets of No. 1 sand paper.
2 pieces of heavy wire screen for cloak racks, 6 ft. x 8 ft.

THREE ROOM ADOBE BUILDING.

Footings—Foundations—Wall—Chimney.

Cement, 32 bbls.
Brick, 10,650.
Lime, 100 bbls.
Sand, 78 yds.
Adobes, 23,000.
Broken rock, 27 yds.
6 pieces screen wire for fresh air inlet, 24 in. x 24 in.
3 stone chimney caps.
18 stone sills, 3 ft. 6 in.
2 " " 11 ft. 6 in.
2 " " 4 ft. 6 in.

FRAMING TIMBER.

Girts—3 pieces, 6 in. x 6 in.—16 ft.
3 " 6 in. x 6 in.—14 ft.
1 " 6 in. x 6 in.—12 ft.
1 " 6 in. x 6 in.—10 ft.
Flooring joists—56 pieces, 2 in. x 10 in.—12 ft.
Ceiling " 78 " 2 in. x 8 in.—24 ft.
Closet studding, 12 " 2 in. x 4 in.—16 ft.
Plates—4 pieces, 2 in. x 6 in.—16 ft.
4 " 2 in. x 6 in.—14 ft.
1 " 2 in. x 6 in.—12 ft.
Rafters— 97 pieces, 2 in. x 6 in.—24 ft.
4 " 2 in. x 4 in.—16 ft.
4 " 2 in. x 4 in.—14 ft.
25 " 2 in. x 4 in.—12 ft.
3 " 2 in. x 8 in.—12 ft.
Bridging and braces—96 pieces, 1 in. x 6 in.—16 ft.
156 " 1 in. x 6 in.—12 ft.
Sheeting, roof, 3,200 ft.
Rough floor, 3,200 ft.
Ventilating flues and chambers, flooring, 200 ft.
27 squares of 5-ply tar and gravel roof.
Steps of cement.
Windows:—18 windows, 30 in. x 36 in.—2 lights.
2 " 42 in. x 42 in.—2 "
6 sash, 18 in. x 30 in.—1 light.
18 transoms, 34 in. x 22 in.—3 lights.
1 " 5 ft. x 2 ft.
2 half circle windows, 10 ft. diameter—1 light.
1 circle window, 3ft. diameter—4 lights.
Doors—2 sash doors, 2 ft 6 in. x 7 ft. 0 in.

INTERIOR FINISHING WORK.

Flooring, 3,200 ft.
Base, 450 ft.
Quarter round, 450 ft.

Doors—2 sash doors, 2 ft. 6 in. x 7 ft. 0 in.
4 panel " 2 ft. 6 in. x 7 ft. 0 in.
2 " " 3 ft. x 7 ft.
6 " " 2 ft. 6 in. x 6 ft. 6 in.
Shelving, 6 pieces 1 in. x 12 in.—16 ft.
Door & window frames & casings—4 pieces 2 in. x 6 in.—20 ft.
8 " 2 in. x 6 in.—16 ft.
1 " 1 in. x 5 in.—20 ft.
57 " 1 in. x 5 in.—18 ft.
8 " 1 in. x 5 in.—16 ft.
2 " 1 in. x 5 in.—14 ft.
3 " 1 in. x 5 in.—10 ft.
20 " 1 in. x 4 in.—18 ft.
2 cement door sills, 6 in. x 8 in.—6 ft.
Stop mould, 533 ft. lineal.
Parting stop, 382 ft. "
Chalk rail, 216 ft. "
Panel mould, 216 ft. "
Cap mould, 216 ft. "

LATH AND PLASTER.

Lath, 4,590.
Plaster, 100 sacks.
Cement for outside walls, 80 sacks.
Sand, 32 yds.

HARDWARE.

3 registers, 20 in. x 20 in.
3 flue thimbles.
1 front door lock.
4 mortise locks.
6 rimlocks.
14 pairs, 4 in. x 4 in. door butts.
6 pairs, 3½ in. x 3½ in. door butts.
18 pairs, transom hinges.
18 transom lifts.
80 sash pulleys.
20 locks and lifts.
800 lbs. sash weights.
400 ft. sash cord.
12 doz. coat and hat hooks.
36 sheets No. 1 sand paper.
Heavy wire screen for cloak racks, 6 ft. x 20 ft.
Nails—150 lbs. 20 ds. common.
150 " 16 " "
150 " 16 " "
400 " 10 " "
300 " 8 " "
35 " 10 " casing.
30 " 8 " "
15 " 6 " "
8 " 4 " "
4 " 3 " "
25 " 8 " finishing
25 " 10 " "
35 " 3 " lath.
2 " 1¼ " brads.

BILL OF MATERIAL FOR A FOUR ROOM ADOBE SCHOOL HOUSE.

Footings—Foundation—Walls—Chimney.

Cement, 50 bbls.
Brick, 11,650.
Adobes, 32,000.
Lime, 140 bbls.
Sand, 112 yds.
Broken stone, 22 yds.
8 screen wires for fresh air inlets, 24 in. x 24 in.
4 stone chimney caps.

FRAMING TIMBER.

Girts—4 pieces, 6 in. x 6 in.—20 ft.
5 " 6 in. x 6 in.—16 ft.
4 " 9 in. x 6 in.—14 ft.
Floor joists—281 pieces, 2 in. x 10 in.—12 ft.
Upper girts—4 pieces, 6 in. x 6 in.—12 ft.
Ceiling joists—96 " 2 in. x 8 in.—24 ft.
97 " 2 in.x 8 in.—12 ft.
Closet studding—48 pieces, 2 in. x 4 in.—14 ft.
Rafters—96 pieces, 2 in. x 6 in.—24 ft.
97 " 2 in. x 6 in.—12 ft.
Posts—24 pieces, 2 in. x 4 in.—16 ft.
24 " 2 in. x 6 in.—12 ft.
4 " 2 in. x 6 in.—16 ft.
Braces, bridging, 96 pieces, 1 in. x 6 in.—12 ft.
Sheeting, roof, 5,000 ft.
Rough floor, 5,000 ft.
Ventilating flue and chamber, flooring, 400 ft.
30 squares of 5-ply tar and gravel roof.
Steps are made of cement.
Windows—24 windows, 12 in. x 24 in.—12 lights.
4 sash, 12 in. x 24 in.—6 lights.
1 half circle sash, 5 ft. in diameter—8 lights.
Doors—4 sash doors, 2 ft. 6 in. x 7 ft.
Lookouts—13 pieces, 4 in. x 6 in.—14 ft.
Plancie—1 in. x 12 in.—390 ft. lineal.
Facie—1 in. x 10 in.—108 ft. lineal.
9 corner beads, 5 ft. long.

INTERIOR FINISHING WORK.

Flooring, 5,000 ft.
Base, 700 ft.
Quarter round, 700 ft.
Doors—4 sash doors, 2 ft. 6 in. x 7 ft. 0 in.
4 panel " 2 ft. 6 in. x 7 ft. 0 in.
4 " " 3 ft. x 7 ft.
8 " " 2 ft. 6 in. x 7 ft.

Door and window frames—4 pieces, 2 in. x 8 in.—12 ft.
4 " 2 in. x 6 in.—16 ft.
24 " 2 in. x 6 in.—14 ft.
1 " 1 in. x 6 in.—16 ft.
8 " 1 in. x 6 in.—14 ft.
80 " 1 in. x 5 in.—16 ft.
22 " 1 in. x 5 in.—14 ft.

Inside casing, 450 ft.
Parting stop, 508 ft.
Window stop mould, 572 ft.
Shelving, 10 pieces, 1 in. x 12 in.—16 ft.
Hook strips, 320 ft.
Chalk troughs, 288 ft.
Cap mould, 288 ft.
Panel mould, 288 ft.

LATH AND PLASTER.

Lath, 8,000.
Plaster, 212 sacks.
Cement for outside walls, 106 sacks.
Sand, 68 yds.

HARDWARE.

Nails—200 lbs. 20 ds. common.
200 " 16 " "
200 " 10 " "
200 " 8 " flooring.
75 " 3 " lath.
30 " 10 " finishing.
30 " 8 " "
15 " 6 " "
10 " 4 " "
10 " 4 " "
5 " 3 " finishing.

4 Registers, 20 in. x 20 in.
4 Flue thimbles, 6 in.
4 Front door locks.
8 Mortise locks.
8 Rimlocks.
12 Pairs of door butts, 4 in. x 4 in.
16 " " " " $3\frac{1}{2}$ in. x $3\frac{1}{2}$ in.
96 Sash pulleys.
24 " locks and lifts.
1,000 lbs. sash weights.
500 ft. sash cord.
200 cloak hooks.
2,500 ft. tin roof.
4 heavy wire screen for cloak racks, 6 ft. x 12 ft.

BILL OF MATERIAL FOR A ONE ROOM FRAME BUILDING

Footings—Foundations—Walls—Chimney.

Cement, 15 sacks.
Brick, 6,050.
Lime, 7 bbls.
Sand 12 yds.
Broken stone 4 yds.
1 stone chimney cap.
2 screen wires for air inlets, 24 in. x 24 in.

FRAMING TIMBER.

Girts—1 piece 6 in. x 6 in.—16 ft.
1 " 6 in. x 6 in.—14 ft.
Sills— 8 " 2 in. x 10 in.—16 ft.
5 " 2 in. x 10 in.—14 ft.
4 " 2 in. x 10 in.—12 ft.
2 " 2 in. x 8 in.—16 ft.
5 " 2 in. x 8 in.—14 ft.
4 " 2 in. x 8 in.—12 ft
Floor joists—56 pieces 2 in. x 10 in.—12 ft.
Ceiling joists—28 pieces, 2 in. x 8 in.—24 ft.
9 " 2 in. x 6 in.—12 ft.
13 " 2 in. x 6 in.—10 ft.
Lookouts—3 pieces, 2 in. x 8 in.—16 ft
3 " 2 in. x 6 in.—16 ft.
Basement frame—1 piece 2 in. x 8 in.—12 ft.
Studding—85 pieces, 2 in. x 4 in.—14 ft.
24 " 2 in. x 4 in.—12 ft.
14 " 2 in. x 4 in.—10 ft.
Plates, Braces and Bridging—34 pieces, 2 in. x 4 in.—16 ft.
8 " 2 in. x 4 in.—14 ft.
12 " 2 in. x 4 in.—12 ft.
32 " 1 in. x 6 in.—16 ft.
Rafters—4 pieces, 2 in. x 6 in.—24 ft.
10 " 2 in. x 4 in.—18 ft.
32 " 2 in. x 4 in.—16 ft.
2 " 2 in. x 6 in.—14 ft.
4 " 2 in. x 4 in.—14 ft.
12 " 2 in. x 4 in.—12 ft.
14 " 2 in. x 4 in.—10 ft.
Sheeting—
Roof, 2,000 ft.
Walls, 2,000 ft.
Rough floor 1,000 ft.
Shingles, 16,000.
Tin Valleys, 2 pieces, 14 in. x 3 ft.
Chimney flashings, 2 pieces, 10 in. x 44 in.
Chimney flashings, 12 pieces, 8 in. x 10 in.
Ventilating flue and chamber—Flooring 70 ft.

EXTERIOR FINISHING WORK.

Siding, 2,150 ft.
2 in. Water Table, 120 ft.
Quarter round, 242 ft.
Cornice—1½ in. flooring on top of rafters—240 ft.
Frieze, 1 in. x 12 in.—156 ft. lineal.
1 in. x 6 in. 156 ft. lineal.
2 in. Panel Mould, 156 ft. lineal.
Corner Casings, 7 pieces, 1 in. x 4 in.—18 ft.
Porch—2 posts (capped) 6 in. x 6 in.—4 ft.
2 half posts (capped) 6 in. x 6 in.—2 ft. 6 in.
Treads for steps, 3 pieces, 1¼ in. x 12 in.—8 ft.
Risers, 3 pieces, ⅞ in. x 7½ in.—8 ft.
Carriage and platform, 2 pieces, 2 in. x 12 in.—10 ft.
Windows—6 windows, 30 in x 36 in.—2 lights.
6 sash, 30 in. x 36 in.—1 light.
1 " 20 in. x 30 in.—1 "
12 transoms, 34 in. x 25 in.—6 lights.
Doors—2 sash doors, 2 ft. 6 in. x 7 ft.—0 in.

INTERIOR FINISHING WORK.

Flooring, 1,120 ft—4 in.
Base, 184 ft.
Quarter round, 184 ft.
3 panel doors, 3 ft x 7 ft.
Shelving, 3 pieces, 1 in. x 12 in.—16 ft.
2 panel doors, 2 ft. 6 in. x 6 ft. 6 in.
Door frames, 11 pieces, 1 in. x 6 in.—14 ft.
1 " 1 in. x 6 in.—8 ft.
Window sills, 3 pieces. 2 in. x 8 in.—10 ft.
Inside casing, 1 in. x 6 in.—120 ft. lineal.
Window frames—3 pieces, 2 in. x 8 in.—20 ft.
4 " 2 in. x 8 in.—12 ft.
2 " 2 in. x 4 in.—12 "
14 " 1 in. x 8 in.—18 "
2 " 1 in. x 8 in.—10 "
4 " 1 in. x 6 in.—12 "
29 " 1 in. x 6 in.—10 "
Parting stop mould, 354 ft.
Window " " 180 ft.
Stool, 1½ in. x 4 in.—62 ft.
Inside casing, 1 in. x 6 in.—103 ft. lineal.
Door stop, 1½ in.—68 ft.
Door stop, 1½ in x 68 ft.
Door casing, 1 in. x 6 in.—120 ft.
Hook strips, dressed and moulded, 1 in. x 4 in.—160 ft.
Chalk troughs, 72 ft.
Cap mould, 72 ft.
Panel mould, 72 ft.

LATH AND PLASTER.

Lath, 5,160.
Plaster, 35 sacks.
Sand, 3 yds.

HARDWARE.

Nails— 25 lbs. 20 ds. common.
100 " 16 " "
200 " 10 " "
20 " 6 " "
100 " 8 " flooring.
30 " 4 " shingle.
25 " 3 " lath.
2 " 1¼ " brads.
15 " 10 " casing.
15 " 8 " "
10 " 6 " "
5 " 4 " "
2 " 3 " casing.
36 sheets No. 1 sand paper.
306 lbs. window weights.
150 ft. " cord.
9 window locks and lifts.
1 front door lock.
3 mortise locks.
13 transom lifts.
4 pairs, 4 in. x 4 in.—door butts.
3 " 3½ in. x 3½ in " "
3 " 3 in. x 3 in. " "
2 door bumpers.
36 pulleys.
4 dozen cloak hooks.
10 pairs, 2 in. x 3 in. hinges.

BILL OF MATERIAL FOR A TWO ROOM FRAME BUILDING

Footings—Foundations—and Chimneys.

Cement, 20 sacks.
Brick, 9,500.
Lime, 10 bbls.
Sand, 10 yds.
Broken stone, 6 yds.
4 wire screens for air inlets, 24 in. x 24 in.
2 chimney caps.
Girts—2 pieces, 6 in. x 6 in.—16 ft.
2 " 6 in. x 6 in.—14 ft.
Sills—10 " 2 in. x 10 in.—16 ft.
4 " 2 in. x 10 in.—14 ft.
2 " 2 in. x 10 in.—12 ft.
4 " 2 in. x 8 in.—16 ft.
4 " 2 in. x 8 in.—14 ft.
10 " 2 in. x 8 in.—12 ft.
Floor Joists—133 pieces, 2 in. x 10 in.—12 ft.
Ceiling joists—56 " 2 in. x 8 in.—24 ft.
6 " 2 in. x 8 in.—16 ft.
28 " 2 in. x 8 in.—12 ft.
Studding—28 pieces, 2 in. x 4 in.—16 ft.
171 " 2 in. x 4 in.—14 ft.
17 " 2 in. x 4 in.—12.
Plates, Braces and Bridging—46 pieces, 2 in. x 4 in.—16 ft.
34 " 1 in. x 6 in.—16 ft.
Rafters—8 pieces, 2 in. x 6 in.—24 ft.
46 " 2 in. x 4 in.—18 ft.
80 " 2 in. x 4 in.—16 ft.
Sheeting—Walls, 3,000 ft.
Roof, 3,000 ft.
Rough floor, 2,000 ft.
Shingles, 23,000.
Tin Valleys, 2 pieces, 14 in. x 20 ft.
Chimney Flashings—4 pieces, 10 in. x 44 in.
Chimney Flashings—4 " 8 in. x 10 in.
Ventilating Flues and Chambers,—Flooring 30 ft.
Siding, 3,500 ft.
2 in. water table, 200 ft.
Quarter round, 430 ft.
Cornice—720 ft. 1¼ in. flooring, on top of rafters.
190 ft. lineal 1 in. x 12 in.—finishing frieze.
190 ft. " 1 in. x 6 in.— " "
190 ft. " 2 in.—half round mould.
6 pieces, 1 in. x 4 in.—18 ft. corner casings.
Porch, 6 Newell Posts 3 ft. 6 in.
2—10 in. Fluted Columns, 7 ft. with carved cap and turned base.

16 Ballusters, 1½ in. x 2½ in.
Mould Rail 14 ft.
2 pieces, 2 in. x 12 in.—12 ft.
100 ft. of 1 in. x 12 in.—finishing.
Windows—14 windows, 30 in. x 36 in.—2 light.
8 sash, 30 in. x 36 in.—1 light.
20 transoms, 34 in. x 25 in.—6 lights.
Doors—2 sash doors, 2 ft. 6 in. x 7 ft.
1 " " 3 ft. x 7 ft.

INTERIOR FINISHING WORK.

Flooring, 2,160 ft.—4 in.
Base, 300 ft.
Quarter round, 432 ft.
3 sash doors. 3 ft. x 7 ft.
4 panel doors, 3 ft. x 7 ft.
4 " " 2 ft. 6 in. x 6 ft. 6 in.
Shelving, 6 pieces, 1 in. x 12 in.—16 ft.
Door frames and casing—3 pieces, 1 in. x 6 in.—16 ft.
39 " 1 in. x 6 in.—14 "
8 " 1 in. x 6 in.—12 "
1½ in door stop mould, 240 ft. lineal.
window stop mould, 250 ft. lineal.
parting stop " 486 " "
Window frames and casing—2 pieces 2 in x 8 in.—20 ft.
1 " 2 in. x 8 in.—12 "
10 " 1 in. x 8 in.—18 "
14 " 1 in. x 6 in.—18 "
16 " 1 in. x 6 in.—14 "
4 " 1 in. x 6 in.—10 ft.
4 in. window stool, 80 ft. lineal.
Finishing aprons, 1 in. x 6 in.—80 ft. lineal.

LATH AND PLASTER.

Lath, 9,530.
Plaster, 63 sacks.
Sand, 5 yds.
Chalk troughs, 144 ft. lineal.
Cap mould, 144 ft. lineal.
Panel, 144 ft. lineal.

HARDWARE.

Nails—50 lbs. 20 ds. common.
200 " 16 " "
400 " 10 " "
200 " 8 " finishing.
40 " 6 " common.
60 " 4 " shingle.
50 " 3 " lath.
2 " 1¼ in. brads.

30 " 10 ds. casing.
30 " 8 ds. casing.
20 " 6 ds. casing.
10 " 4 " "
4 " 3 ds. casing.
72 sheets No. 1 sand paper.
612 lbs. window weights.
300 ft. window cord.
12 sash locks and lifts.
1 front door lock.
5 mortise locks.
4 rimlocks.
20 transom lifts.
15 pairs door butts, 4 in. x 4 in.
4 pairs door butts, $3\frac{1}{2}$ x $3\frac{1}{2}$ in.
9 bumpers.
80 pulleys.
8 doz. cloak hooks.
20 pairs transom hinges.
Heavy wire screen for cloak racks, 6 ft. x 12 ft.

MATERIAL FOR A THREE ROOM FRAME HOUSE.

Foothings—Foundations—Walls—Chimneys.

Cement, 34 sacks.
Brick, 14,400.
Lime, 15 bbls.
Sand, 14 loads.
Broken stone, 7 yds.
Chimney Caps.
Girts—3 pieces 6 in. x 6 in.—16 ft.
3 " 6 in. x 6 in.—14 ft.
Sills—29 " 2 in. x 10 in.—16 ft.
6 " 2 in. x 10 in.—14 ft.
4 " 2 in. x 10 in.—10 ft.
7 " 2 in. x 8 in.—16 ft.
6 " 2 in. x 8 in.—14 ft.
12 " 2 in. x 8 in.—12 ft.
4 " 2 in. x 8 in.—10 ft.
Floor joist—191 pieces, 2 in. x 10 in.—12 ft.
7 " 2 in. x 6 in.—14 ft.
Ceiling joist—84 " 2 in. x 8 in.—24 ft.
6 " 2 in. x 8 in.—16 ft.
12 " 2 in. x 4 in.—16 ft.
320 " 2 in. x 4 in.—14 ft.
Plates, Braces, Bridging—44 pieces, 2 in. x 4 in.—16 ft.
12 " 2 in. x 4 in.—14 ft.
96 " 1 in. x 6 in.—16 ft.
Rafters—4 pieces, 2 in. x 6 in.—28 ft.
2 " 2 in. x 6 in.—34 ft.
32 " 2 in. x 4 in.—20 ft.
30 " 2 in. x 4 in.—18 ft.
64 " 2 in. x 4 in.—16 ft.
8 " 2 in. x 4 in.—12 ft.
34 " 2 in. x 4 in.—10 ft.
Basement frames.—2 pieces, 2 in x 8 in.—14 ft.
Sheeting. Roof, 3,264 ft.
Walls, 4,700 ft.
Rough floor, 3,484 ft.
Shingles, 30,000
Ventilating flues and chambers—Flooring, 140 ft.
Tin Valleys, 2 pieces 14 in. x 24 ft.
Chimney Flashings 6 pieces, 10 in. x 44 in.
36 pieces 8 in. x 10 in.

EXTERIOR FINISHING WORK.

Siding, 4,700 ft.
2 in. water table, 248 ft.
Panel mould, 310 ft.
Cornice, 924 ft. of flooring on top of rafters.

Quarter round, 548 ft.
Frieze—1 in. x 12 in.—310 ft. lineal.
1 in. x 6 in.—310 ft. lineal.
Corner casing, 7 pieces 1 in. x 4 in —18 ft.
Porch steps of cement.
Windows—19 windows, 30 in. x 36 in.—2 lights.
3 sash, 30 in. x 36 in.—1 light.
22 transoms, 34 in. x 25 in—1 light.
Doors—2 sash doors, 2 ft. 6 in. x 7 ft. 0 in.

INTERIOR FINISHING WORK.

Flooring, 3,484 ft.
Base, 400 ft.
Quarter round, 400 ft.
2 sash doors, 2 ft. 6 in. x 7 ft.
6 panel doors, 3 ft. x 7 ft.
8 " " 2 ft. 6 in. x 6 ft. 6 in.
Shelving, 9 pieces, 1 in. x 12 in.—16 ft.
Doors and window frames—5 pieces, 2 in. x 8 in.—14 ft.
2 " 2 in. x 8 in.—12 "
38 " 1 in. x 6 in.—18 "
32 " 1 in. x 6 in.—16 "
8 " 1 in. x 6 in.—12 "
19 " casing—18 ft.
21 " " —16 "
33 " " —14 "
3 " " —12 "
4 " 1¼ in. x 12 in.—14 ft.
4 pieces window stool, 88 ft. lineal.
Parting stop, 730 ft. lineal.
Window stop mould 410 ft. lineal.
Door stop mould, 300 ft. lineal.
12 corner beads 5 ft. lineal.
4 slat ventilators for tower.
Blackboard cap, 200 ft. lineal.
Chalk troughs, 200 ft. lineal.
Panel mould, 200 ft. lineal.
Hook strips, 400 ft. lineal.

LATH AND PLASTER.

Lath, 15,180.
Plaster, 100 sacks.
Sand, 8 yds.

HARDWARE.

Nails— 75 lbs. 20 ds. common.
150 " 16 " "
250 " 10 " "
60 " 6 " "
300 " 8 " finishing.
100 " 4 " shingle.

125 " 3 " lath.
5 " 1½ " brads.
45 " 10 " casing.
45 " 8 " "
30 " 6 " "
15 " 4 " "
6 " 3 " casing.
100 sheets No. 1 sand paper.
Window weights, 918 lbs.
" cords, 420 ft.
" locks and lifts, 21 ft.
" pulleys, 84

Transom lifts, 22 ft.
1 front door lock.
6 mortise locks.
8 padlocks.
3 pairs door butts, 4 in x 4 in.
8 " " " 3½ in. x 3½ in.
8 " " " 3 in. x 3 in.
22 transom butts.
8 door bumpers.
12 dozen cloak hooks.
Heavy wire screen for coat racks, 6 ft. x 18 ft.

BILL OF MATERIAL FOR A ONE ROOM BRICK BUILDING.

Footings—Foundations—Walls—Chimney.

Cement, 15 sacks.
Brick, 40,000.
Lime, 40 bbls.
Sand, 21 yds.
Broken stone, 4 yds.
1 Chimney cap.
4 screen wires for air inlets, 24 in. x 24 in.
2 stones, 8 in. x 8 in.—6 ft.
Sill course stone, 10 in.—134 ft. lineal.
Cap " " 6 in.—120 ft. "
Stone window sills 4 in.— 35 ft. "
" " caps 6 in.— 35 ft. "

FRAMING TIMBER.

Girts—1 piece, 6 in. x 6 in.—16 ft.
1 " 6 in. x 6 in.—14 ft.
Floor joists—60 pieces, 2 in. x 10 in.—12 ft.
Ceiling—30 pieces, 2 in. x 8 in.—24 ft.
Purlin Plates—2 pieces, 2 in. x 6 in.—16 ft.
Basement Frames—2 pieces, 2 in. x 8 in.—12 ft.
Braces and bridging—32 pieces, 1 in. x 6 in.—16 ft.
60 " 1 in. x 6 in.—12 ft.
Studding—30 pieces, 2 in. x 6 in.—14 ft.
Rafters—36 pieces, 2 in. x 6 in.—24 ft.
Sheeting—Roof, 1,200 ft.
Rough Floor, 1,200 ft.
Ventilating flue and chamber—Flooring 50 ft.

EXTERIOR FINISHING WORK.

Steps made of cement.
8 squares of 5-ply tar and gravel roof.
Windows—10 windows 30 in. x 48 in.—2 lights.
1 transom 60 in. x 16 in.—1 light.
Doors, 2 sash doors 2 ft. 6 in. x 7 ft.

INTERIOR FINISHING WORK.

Flooring, 1,200 ft.
Base, 220 ft.
Quarter round, 220 ft.
4 panel doors 3 ft. x 7 ft.
1 " " 2 ft. 6 in. x 6 ft. 6 in.
Shelving, 3 pieces 1 in. x 12 in.—16 ft.
Door & window frames casing—1 piece, 2 in. x 6 in.—20 ft
8 " 1 in. x 6 in.—10 ft.
29 " 1 in. x 5 in.—18 ft.
4 " 1 in. x 5 in.—16 ft.
20 " 1 in. x 5 in.—14 ft.
Parting stop, 190 ft.

Parting stop mould, 190 ft.
Stool, 38 ft.
Brick mould, 130 ft.
32 Base blocks, 1¼ in. x 12 in.
Hook strips, 1 in. x 4 in.—100 ft.
Chalk troughs, 72 ft.
Cap mould, 72 ft.
Panel mould, 72 ft.

LATH AND PLASTER.

Lath, 3,900.
Plaster, 47 sacks.
Sand, 10 yds.

HARDWARE.

1 front door lock.
4 mortise locks.
1 rimlock.
1 transom lift.
500 lbs. window weights.
200 ft. sash cord.
10 window locks and lifts.
9 pairs, 4 in. x 4 in. door butts.
1 " 3½ in. x 3½ in. door butts.
5 door bumpers.
40 pulleys.
4 dozen cloak hooks.
1 flue thimble.
1 register, 20 in. x 20 in.
Nails— 50 lbs. 20 ds. common.
150 " 10 " "
50 " 16 " "
100 " 8 " flooring.
18 " 3 " lath.
10 " 10 " casing.
10 " 8 " "
5 " 6 " "
4 " 4 " "
2 " 3 " casing.

BILL OF MATERIAL FOR A TWO ROOM BRICK SCHOOL HOUSE.

Footings—Foundations—Walls—Chimney.

Cement, 25 sacks.
Brick, 68,000.
Lime, 68 bbls.
Sand, 31 yds.
Broken stone, 7 yds.
2 chimney caps.
4 screen wires for air inlets, 24 in. x 24 in.
4 stones, 8 in. x 8 in.—6 ft.
10 in. stone sill course—182 ft. lineal.
Stone cap courses, 6 in. x 153 ft. lineal.
4 in. stone window sills, 67 ft. lineal.
6 " " " caps, 67 ft. lineal.

FRAMING TIMBER.

Girts—2 pieces, 6 in. x 6 in.—16 ft.
2 " 6 in. x 6 in.—14. ft.
Floor joists—120 pieces, 2 in. x 10 in.—12 ft.
Ceiling joists—60 " 2 in. x 8 in.—24 ft.
4 " 2 in. x 6 in.—16 ft.
Basement frames—4 pieces, 2 in. x 8 in.—12 ft.
Braces and bridging—64 pieces, 12 in. x 6 in.—16 ft.
120 " 1 in. x 6 in.—12 ft.
Studding—63 pieces, 2 in. x 4 in.—14 ft.
Rafters — 70 " 2 in. x 6 in.—24 ft.
20 " 2 in. x 4in.—16 ft
Plates—1 piece, 2 in. x 8 in.—16 ft.
1 " 2 in. x 8 in.—14 ft.
Sheeting roof, 2,400 ft.
Rough floor, 2,400 ft.
Ventilating flue and chamber, flooring, 288 ft.

EXTERIOR FINISHING WORK.

Steps of cement.
18 squares of 6-ply tar and gravel roof.
Windows—18 windows, 30 in. x 48 in.—2 lights.
1 sash, 30 x 48.—1 light.
2 transoms, 10 in. x 16 in.—1 light.
Doors—4 sash doors, 2 ft. 6 in. x 7 ft.

INTERIOR FINISHING WORK.

Flooring, 2,400 ft. lineal.
Base, 440 ft. lineal.
Quarter round, 440 ft. lineal.
8 panel doors, 3 ft. x 7 ft.
2 " " 2 ft. 6 in. x 6 ft. 5 in.
Shelving, 6 pieces, 1 in. x 12 in.—16 ft.

Door & window frames & casings—2 pieces 2 in. x 6 in.—20 ft.
14 " 1 in. x 6 in.—14 "
1 " 1 in. x 6 in.—10 "
57 " 1 in. x 5 in.—18 "
9 " 1 in. x 5 in,—16 "
41 " 1 in. x 5 in.—14 ft.

Parting stop, 383 ft. lineal.
" " mould 283 ft. lineal.
Stool, 76 ft. "
Window casing, 240 ft. "
Brick mould, 260 ft. "
8 Corner beads, 5 ft. "
54 Base blocks, 1¼ in. x 12 in.
Hook strips, 1 in. x 4 in. –160 ft.
Chalk troughs, 144 ft.
Cap mould, 144 ft.
Panel mould, 144 ft.

LATH AND PLASTER.

Lath, 7,500.
Plaster, 85 sacks.
Sand 20 yds.

HARDWARE.

Heavy wire screen for coat rack—6 ft x 18 ft.

2 front door lock.
8 mortise locks.
2 rimlocks.
2 transom lifts.
1,000 lbs. window weights.
400 ft. sash cord.
18 window locks and lifts.
21 pairs 4 in. x 4 in.—door butts.
2 " 3½ in. x 3½ in.—door butts.
10 door bumpers.
72 pulleys.
8 doz. cloak hooks.
2 flue thimbles.
2 register 20 in. x 20 in.
Nails—100 lbs. 20 ds. common.
100 " 16 " "
300 " 10 " "
200 " 8 " flooring.
30 " 3 " lath.
20 " 10 " casing.
20 " 8 " "
10 " 6 " "
8 " 4 " "
4 " 3 " "

BILL OF MATERIAL FOR A FOUR ROOM BRICK BUILDING.

Footings—Foundations—Walls—Chimneys.

Cement, 120 sacks.
Brick, 293,000.
Lime, 293 bbls.
Sand, 238 yds.
Broken stone, 28 yds.
Stone sills and caps—4 in. stone, 225 ft.
6 in. stone, 382 ft.
Stone or cement sill, 12 in. course, 216 ft.

FRAMING TIMBER.

Flooring joists—96 pieces, 2 in. x 14 in.—24 ft.
48 " 2 in. x 10 in.—16 ft.
48 " 2 in. x 10 in.—12 ft.
Ceiling—48 pieces, 2 in. x 8 in.—24 ft.
24 " 2 in. x 8 in.—16 ft.
23 " 2 in. x 8 in.—12 ft.
Braces and bridging—134 pieces, 1 in. x 5 in.—18 ft.
7 " 2 in. x 4 in.—12 ft.
Studding—136 pieces, 2 in. x 4 in.—16 ft.
114 " 2 in. x 24 in.—14 ft.
Rafters—48 pieces, 2 in. x 6 in.—24 ft.
24 " 6 in. x 2 in.—16 ft.
24 " 2 in. x 6 in.—12 ft.
Sheeting—Roof, 3,000 ft.
Rough floor, 6,000 ft.
Ventilating flues and chamber—Flooring, 420 ft.

EXTERIOR FINISHING WORK.

2 flights of cement steps.
3 " stairs, inside (wood.)
Windows—40 windows, 30 in. x 48 in.—2 lights.
4 " 32 in. x 32 in.—2 "
10 basement sash, 30 in. x 30 in—2 lights.
3 transoms, 60 in. x 30 in.—1 light.
2 glass, 24 in. x 54 in.—1 light.
2 " 24in. x 24 in.—1 light.
Doors—4 sash doors, 2 ft. 6 in. x 7 ft.
24 squares of 5-ply tar and gravel roof.

INTERIOR FINISH WORK.

Flooring, 5,400 ft.
Base, 1,000 ft.
" mould, 1,000 ft.
Quarter round mould, 1,000 ft.
140 base blocks, 1¼ in. x 12 in.

Doors—2 sash doors, 2 ft. 6 in. x 7 ft.
12 panel doors, 3 ft. x 7 ft.
16 " " 2 ft. 6 in. x 6 ft. 6 in.
Shelving—14 pieces, 1 in. x 12 in.—16 ft.
Door and window frames and casings,
Stool, 152 ft. lineal.
Casing, 4,420 ft. "
Cap trim, 250 ft. lineal.
Sub. casing 2,000 ft. lineal.
Window stop mould, 824 ft.
Parting " " 821 ft.
Chalk troughs, 288 ft.
Cap mould, 288 ft.
Panel " 288 ft.
18 pieces 2 in. x 6 in.—12 ft.
7 pieces 1 in. x 6 in.—16 ft.
32 pieces 1 in. x 6 in.—14 ft.
5 pieces 1 in. x 6 in.—12 ft.
120 pieces 1 in. x 5 in.—18 ft.
20 pieces 1 in. x 5 in.—16 ft.
14 pieces 1 in. x 5 in.—12 ft.

LATH AND PLASTER.

Lath, 12,240.
Plaster, 170 sacks.
Sand, 35 yds.

HARDWARE.

Nails—200 lbs. 20 ds. common.
600 " 10 " "
200 " 16 " "
400 " 8 " flooring.
60 " 3 " lath.
40 " 8 " casing.
40 " 10 " casing.
20 " 6 " "
16 " 4 " "
8 " 3 " casing.
4 registers, 20 in. x 20 in.
4 flue thimbles, 6 in.
2 front door locks.
8 mortise locks.
20 rimlocks.

18 pairs door butts, 4 in. x 4 in.
12 " " " 3½ in. x 3½ in.
16 " " " 3 in. x 3 in.
3 pairs transom butts.
3 " lifts.
176 sash pulleys.
44 sash locks and lifts.
2,400 lbs. sash weights.
1,156 ft. " cord.
16 dozen cloak hooks.
8 pairs door bumpers.